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# VETERINARY MEDICINE

MONADNOCK BLOCK
*Chicago*

U. S. Meat Inspection Service Should Remain in the Department of Agriculture
*By D. M. CAMPBELL*

Combination Tuberculin Tests
*By A. J. DEFOSSET*

Infectious Abortion in Mares
*By E. S. GOOD*

Use of Camphor in Thermic Fever
*By D. W MARKS*

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VOL. XVI

No. 8

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# Veterinary Medicine

Vol XVI AUGUST, 1921 Number 8

## Editorial Comment

### U. S. MEAT INSPECTION SERVICE SHOULD REMAIN IN THE DEPARTMENT OF AGRICULTURE.

THE transfer of the Meat Inspection Division of the Bureau of Animal Industry to a Department of Public Welfare, a proposition which has been discussed in the daily press in connection with the reorganization of the federal departments, has been urged on the score of economy and efficiency. To any person familiar with the workings of the meat inspection service of the bureau, and especially to the veterinarian, the statement that such a transfer would promote either economy or efficiency demands proof.

So far as economy is concerned, the meat inspection service is at present a veterinary establishment co-ordinated with other veterinary establishments. This co-ordination makes two important things possible along the lines of economy. For one thing, the peak of the meat inspection work comes in winter and the slack period in summer, while the field service of the bureau has its peak in summer and its slack period in winter. As a result it is possible to transfer veterinarians from one of these services to the other as the work in one service decreases and that in the other increases. If the meat inspection service were an isolated veterinary unit in a Department of Pub'ic Welfare such transfer to the veterinary service of a different department would not be possible under present arrangements and even if made possible would still involve an immense amount of red tape and correspondence, as all interdepartmental transactions do. Failing such a method of balancing summer and winter work, a meat inspection service in a Department of Public Welfare would have to carry a force too large for its summer demands or too small for its winter demands, at a sacrifice of either economy or efficiency.

For another thing, the present meat inspection work is co-ordinated with and based on the laboratory and technical divisions of the bureau. Problems in meat inspection may be referred directly to the experts carrying on investigations and the necessary investigations ordered and directed within the Department of Agriculture. If the meat inspection service were in another department, problems would have to be referred through interdepartmental channels and would ultimately come to laboratories divorced from meat inspection work and consequently less interested in their solution. The resultant economic loss involved in this extra handling might readily involve an additional loss in efficiency.

So far as efficiency is concerned, the meat inspection service of the Bureau of Animal Industry is unsurpassed in the world. It has developed in connection with the laboratories of the bureau and is co-ordinated with them. All this development has been under the direction of veterinarians. The proposal to transfer the meat inspection work to a service or department directed by physicians does not promise any improvement in the way of efficiency. Physicians are not educated or trained along the lines of meat inspection or in the pathology, diseases or even normal anatomy of the domesticated animals. There is nothing reasonable in the proposition that a veterinary service should be subject to the supervision of physicians. A Secretary of Agricu'ture, with a knowledge of agricultural topics would not undertake to overrule the decision of veterinarians on veterinary topics; a physician in the capacity of Secretary of Public Welfare might judge himself capable of overruling veterinarians on such topics on the strength of a knowledge of related medical topics—and might easily be seriously mistaken in his ru'ings! There is no suggestion that the present meat inspection service is inefficient or unsatisfactory. This being true, what increased efficiency could be hoped for from a change which would fundamentally disrupt an organization which has undergone a normal

and co-ordinated growth under its present status?

At the present time the meat inspection service constitutes the largest division of a large veterinary establishment. It serves as a training school for veterinarians entering the federal service outside of the army and supplies men for temporary and permanent positions in the field service and the laboratories. Its separation from these services would hamper them and perhaps lead to the duplication of the existing laboratories in part in order to supply the necessary co-ordination between inspection and laboratory service in the proposed Department of Public Welfare. The end result promises to be increased expense to the taxpayer and probably temporary or even permanent loss of efficiency in the meat inspection service. It is a proposition that the veterinarian and people in general should look on with disfavor.

A plan of education in this matter should be instituted at once. It should have in view the informing of the public in general and congress in particular on these matters. The presidential order prohibiting employes of the Federal government from participating in any movement designed to effect the action of congress in bringing about the much heralded changes in the executive departments in Washington prevents veterinarians in the bureau from taking any part in such a plan. The apparent intention to transfer the meat inspection service to the new department of public welfare must be combatted, if at all, by veterinarians not in the government service. It is a national problem and seemingly within the province of the A. V. M. A.

## BOOK REVIEW.

### Your Dog and Your Cat—How to Care for Them.

A treatise on the care of the dog and cat in the home, by Roy H. Spaulding, D. V. M. Formerly resident veterinarian at the New York Women's League for Animals; head of Animal Hospital of New York City. Published by D. Appleton & Co., New York and London. Cloth, 167 pages; price $1.50.

This book, the only one of its kind as far as we know, written by an American veterinarian, and by one who knows his subject should receive the hearty support of the veterinary profession. It is intended as a guide for the dog and cat owner and novice breeder.

The writer has used rare good judgment, uncommon in such works, insomuch as he realized "that a little knowledge of medicine is a dangerous thing" and with the occasional exception of the suggestion of a few simple remedies, advises that a veterinarian be promptly called.

Many veterinarians, both city and country practitioners, have hitherto neglected small animal practice, but are now catering to it. To those who are merging into canine and feline work, and who are deficient in their knowledge of many of the natural traits and habits of dogs and cats as well as the proper methods of handling them, will find this little book of great help in quickly acquiring this essential knowledge, as it includes chapters on the care of the dog and cat; medical care, which includes instructions regarding the administration of medicines; care and disease of breeding animals which includes the diagnosis of the estral period, best time of period to breed, pregnancy, false pregnancy (a condition common in the bitch) and care of the breeding animals; a chapter on foods and feeding of puppies and adult dogs, also cats and kittens.

These, the veterinarian must know if he is to be successful in canine and feline practice, not only for his own personal use but he frequently is called upon to give instruction to owners on such topics.

By his knowledge of them, his clients judge his technical knowledge and skill.

The book is written in plain words, printed in large clear type, and contains much of value to both the layman and the veterinarian, and is one that the veterinarian can conscientiously recommend to his clients who frequently make inquiries for such a book.—Q.

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In France, where the students have to pass a very high-standard competitive entrance examination and undergo a severe course of instruction, quackery is more rampant than in this country.—The Veterinary News.

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In Germany, where more attention is paid to education, general, professional or technical, there is no quackery and usurpation of the function of another is forbidden. Not only are the veterinary schools highly equipped with teachers and material, but the agricultural schools in many respects are superior to our universities, old as well as modern. There the masses are educated and all the professions, too.—The Veterinary News.

# Combination Tuberculin Tests

By A. J. DeFOSSET,
Inspector in Charge, Tuberculosis Eradication in Vermont.

BY combination tuberculin tests we understand the tuberculin testing of cattle by two or more methods of test employed simultaneously. The methods used are the subcutaneous, the intradermic and the ophthalmic. Usually only two of these methods are given in combination. Occasionally, however, it is advisable and necessary in certain cases to employ all three methods together. The conditions in the field, the circumstances of the case, as well as the history of the herd usually determine what combination to employ.

**Why Combinations Are Made.**

Careful observations made by our field veterinarians during the past two years have brought to their attention the existence of conditions in certain herds which necessitate the employment of the most searching methods if success is to be attained in detecting the disease in some members of the herd, and the complete extermination of the infection. As will be noted in tables which follow there are numerous animals that fail to respond to a single test of any method which can very readily be detected by a combination of methods

It is not always possible to ascribe a reason why some animals fail to react to one method and at the same time respond with violence to some other method. The theory of reaction in the various tests is essentially the same. It may be probable, however, that some tissues or organs are more sensitive than are others or in fact some tissues may have reached a higher stage of hypersensitiveness. We know that both the skin and the eye are very sensitive organs and that the disintegration of the bacteria protein in the tuberculous organs and that the disintegration of the bacteria protein in the tuberculin when acted upon by the fermenting antibodies or lysins, and termed reaction, irritates these organs where treatment was applied in a very perceptible manner.

Combination tuberculin testing, considering the number of years tubercu'in has been employed as a diagnostic agent, is comparatively new and the data available on the subject is coming mainly from the officials in charge of co-operative tuberculosis eradication.

In Vermont four different combination methods have been employed during the past two years on a total of 567 herds containing 16,-882 cattle of all breeds and ages; 1,409 were removed from the herds by the various combination test methods. Much can be said about these various combinations and the results obtained in the application of these methods and I will discuss the subject under four groups.

(1) Subcutaneous, ophthalmic and intradermic method.
(2) Subcutaneous and ophthalmic method.
(3) Intradermic and ophthalmic method.
(4) Subcutaneous and intradermic method.

**Subcutaneous, Ophthalmic and Intradermic Combination.**

Table A shows the results of work under group 1, the subcutaneous, ophthalmic and intradermic combination commonly termed the triple combination method.

Table A

| | |
|---|---|
| Number of lots tested ..... | 30 |
| Total number of cattle tested..... | 1284 |
| Total number reactors found a'l tests. | 235 |
| Number reacting to subcutaneous test. | 166 |
| Number reacting to ophthalmic test.. | 215 |
| Number reacting to intradermic test.. | 165 |
| Number subcutaneous reactors showing no visible lesions on autopsy... | 2 |
| Number ophthalmic reactors showing no visible lesions on autopsy ..... | 9 |
| Number intradermic reactors showing no visible lesions on autopsy ..... | 7 |

In this combination group we find an occasional reactor to one of the methods that may fail to respond to the two other methods employed. Such cases, however, are rare. In most instances where reactors do not respond to each method the reverse is true, that is, occasionally an animal will fail to respond to one of the methods and react to the other two of the triple combination. It would appear therefore, that for purposes of higher efficiency it is advisable to employ the triple combination method. There is another important factor which makes it desirable that the triple com-

bination method be employed in exceptional cases. Oftimes certain animals may exhibit atypical reaction to one or two methods employed and it is difficult to make a ready decision or diagnosis, hence with the additional check of a third method as employed in the triple combination a decided reaction may be observed by one method while on two other methods the animal may exhibit only atypical reaction. The additional method employed in such instances will enable the operator to make a proper diagnosis and ready disposition of the case in question.

It has been observed that the best results obtained in the triple combination are from the ophthalmic and intradermic methods. The subcutaneous method in many instances failed in a shocking manner. I recall particularly a herd of 78 pure-bred Holstein cattle which was tested by the triple combination method where 46 reactors were found after the test was completed, 27 which reacted to the subcutaneous method—40 to the ophthalmic method—and 33 to the intradermic method. It is noteworthy, however, that one animal in the herd reacted to the subcutaneous method alone and failed to react to the other two methods. On autopsy this animal proved to be a generalized case. Eight reached to the ophthalmic which failed on the other two methods and two reacted to the intradermic which failed to the other two methods. We have similar cases on record but they are comparatively few. In nearly all cases the records show that those cases which fail to respond to one method will react to the other two methods employed and we can assume therefore that a very small number of reactors will escape detection by the employment of a combination of two efficient methods. I wou'd encourage, however, the triple combination method in certain herds with unusually bad history; also in instances where veterinarians are not thoroughly familiar with combination methods, it may be desirable to have all three methods to better enable him in rendering judgment at the conclusion of the test.

**How the Combination Is Applied.**

Probably the most economical and practical manner in which this test can be given is to introduce the ophthalmic tuberculin at the same time that the intradermic injection is made. An observation may be made for intradermic reaction at the 48th hour. When the 72d hour observation for intradermic reaction is made the initial temperatures may be taken for the subcutaneous test and at about the 78th hour the subcutaneous injection of tuberculin may be made. The post-injection temperatures should be taken at the customary time and the second or diagnostic ophthalmic treatment should be given immediately after the first post-injection temperature measurement. The three tests can now be completed at about the same time or 98 hours from the time the test commenced. If this combination is given in this order one method will not interfere with another. The theory has been advanced that the injection of intradermic tuberculin was responsible for some of the disastrous failures of the subcutaneous method where this combination was applied. If it is true that intradermic tuberculin may "block" in a measure the subcutaneous test, how then can we account for failures of the subcutaneous test in cases where the subcutaneous method had been completed before other check methods were employed and a large number of additional reactors were removed by the check test that had utterly failed to respond to the subcutaneous test?

I refer to five herds in particular with bad history and consisting of 197 animals in which 87 animals were removed by the subcutaneous method. Immediately afterwards the ophthalmic method was employed to the remainder of the herds and 46 additional reactors were found which passed the subcutaneous test. Certainly in these cases nothing was done to "block" the efforts of the subcutaneous method. The theory might be advanced, however, that in such instances the subcutaneous test acted as a sensitizing agent for the ophthalmic method, but we have a case on record where the ophthalmic method had been completed before the subcutaneous was applied on a herd of 37 head. The result of this test indicated 10 reacted to the ophthalmic method, and the subcutaneous method which was completed the following day on the same herd detected only two members. These results are only indicative of the necessity of combination methods wherever and whenever possible.

**Subcutaneous and Ophthalmic Combination.**

Table B shows results of work under group 2.

TABLE B

| | |
|---|---|
| Number of lots tested | 123 |
| Total number cattle tested | 4187 |

| | |
|---|---|
| Total number reactors found both tests | 698 |
| Number reacting to ophthalmic but not subcutaneous test | 264 |
| Number reacting to subcutaneous and not ophthalmic test | 28 |
| Number subcutaneous reactors showing no visible lesions on autopsy | 3 |
| Number ophthalmic reactors showing no visible lesions on autopsy | 11 |
| Number reacting to both tests showing no visible lesions on autopsy | 3 |

This combination has proven itself a very effective one insofar as it pertains to the work done in the state of Vermont. Attention is directed to the exceedingly large number of animals that responded to the ophthalmic method and failed to react to the subcutaneous test given at the same time. It should also be noted that a considerable number of animals failed to respond to the ophthalmic method and failed to react to the subcutaneous test given at the same time. It should also be noted that a considerable number of animals failed to respond to the ophthalmic method and were detected by the subcutaneous test given at the same time, emphasizing again the importance of combination methods.

**How the Combination Is Applied.**

It has been customary to give a sensitizing ophthalmic tablet before the subcutaneous tuberculin is injected. The number of hours required for sensitization varies according to investigation in the several states. Some inspectors believe that a 16-hour period of sensitization is sufficient while others believe that 72 hours are required for good results. The time for sensitization depends much upon the circumstances. It is not always practical to hold animals 72 or 96 hours until the diagnostic tablet can be given; also conditions may be such in area work that no definite or set time can be carried out with precision. However, I believe from personal observation that there is a minimum and maximum time limit for this period if the best of results are to be obtained. I believe that the most characteristic reactions as a whole have been noted with a 72-hour period. This statement should not be construed, however, as meaning that good reactions may not appear with a shorter sensitization period or a longer period ranging perhaps over 120 hours, for indeed I have seen very good reactions in some individuals with only 24-hour sensitization and again in cases that were not sensitized at all. I recommend most emphatically sensitization over a sufficient period of time as circumstances warrant.

After the animals have become sensitized by the ophthalmic treatment the preliminary temperatures should be taken in the usual manner preparatory to the subcutaneous injection of tuberculin. Eight hours after the injection of subcutaneous tuberculin, the first post-injection temperature measurement should be placed into the sensitized eye. Ophthalmic observations should be made hourly or at two-hour periods following the introduction of the diagnostic ophthalmic tablet. The temperature measurements should be carried out in the customary manner and the ophthalmic test completed with the completion of the subcutaneous method. If this combination is carried out in this order it will be found that the subcutaneous tuberculin will aid in a marked degree the ophthalmic reaction in certain cases. This fact may account for the high degree of efficiency of the ophthalmic method generally when combined with the subcutaneous; also less time will be required for making the test if given in the above order. I do not believe that there are two other methods of test, when in combination, the one will aid so materially the efficiency of the other. Very frequently it has been reported by our inspectors that a number of animals in the herd will show ophthalmic reaction from the treated eye six or eight hours after the injection of subcutaneous tuberculin.

**The Ophthalmic and Intradermic Combination.**

Table C shows results of work under group 3.

TABLE C.

| | |
|---|---|
| Number of lots tested | 377 |
| Total number cattle tested | 10,797 |
| Total number reactors found both tests | 471 |
| Number reacting to ophthalmic but not intradermic test | 43 |
| Number reacting to intradermic but not ophthalmic test | 38 |
| Number of ophthalmic reactors showing no visible lesions on autopsy | 2 |
| Number of intradermic reactors showing no visible lesions on autopsy | 5 |
| Number reacting to both tests showing no visible lesions on autopsy | 33 |

| Number | Age—Years | Amount Injected | SUBCUTANEOUS TEST | | | | | | | | | OPHTHALMIC TEST | | | | | | INTRADERMIC TEST | | AUTOPSY REPORT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | April 28, 1920 | | | April 28, 1920 | | | | | | Sen. April 28, 1920 | Diagnostic Treatment May 1, 1920 at 5:30 A. M. | | | | | Injection Made Sept. 3, 1920 at 9 A. M. | | | |
| | | | 1P | 4P | 5P | 3a | 5a | 6a | 11a | 7P | 3P | 8:30 | 7a | 9a | 11a | 1P | 3P | | | | |
| | | cc | | | | | | | | | | | N | N | N | N | N | | | Held for retest | |
| 1 | 4 | 8 | 10 | 06 | 14 | 12 | 32 | 54 | 30 | 12 | 08 | | L | L | L | L | L | | | Held for retest | Path. |
| 2 | 4 | 8 | 12 | 15 | 12 | 32 | 48 | 70 | 38 | 32 | 26 | | | | | | | | | Held for retest | Lab. Report |
| 3 | 4 | 8 | 14 | 14 | 08 | 22 | 46 | 52 | 38 | 16 | 12 | | N | ½X | N | N | N | | | Hypr. Glds. | Negative |
| 4 | 4 | 8 | 08 | 12 | 14 | 20 | 24 | 52 | 30 | 28 | 22 | | L | L | L | L | L | | | Hypr. Glds. | |
| 5 | 5 | 8 | 12 | 16 | 10 | 42 | 58 | 54 | 54 | 52 | 40 | | L | ½X | LX | LX | LX | | | Hide & Mamary | Positive |
| 6 | 5 | 8 | 14 | 18 | 12 | 26 | 36 | 42 | 48 | 46 | 40 | | ½X | LX | LX | LX | LX | | | Hypr. Gld. | |
| 7 | 4 | 8 | 10 | 14 | 10 | 16 | 14 | 50 | 43 | 34 | 30 | | L | ½X | L | L | N | | | Udder Hide | Positive |
| | | | | | | | | | | | | | | | | | | | | Hyp. Glds. | Negative |
| | | | | | | | | | | | | | | | | | | Hrs. | Hrs. | | |
| | | | | | | | | | | | | | | | | | | 90 | 106 | Aug. 8 | |
| | Retest on 1, 2 and 3 Aug. 3 to 7, 1920 | | | | | | | | | | | | | | | | | | | | |
| 1 | 4 | 24 | 18 | 16 | 12 | 08 | 08 | 14 | 10 | 08 | 08 | | N | N | N | N | N | N | T | No lesions | Negative |
| 2 | 4 | 24 | 14 | 15 | 22 | 42 | 52 | 36 | 26 | 16 | 16 | | L | L | L | L | L | P | P | No lesions | Negative |
| 3 | 4 | 24 | 15 | 10 | 24 | 40 | 22 | 14 | 14 | 10 | 06 | | N | N | N | N | N | P | P | No lesions | Negative |

Ophthalmic Key—L Lachrymation, ½X trace of exudate, X slight exudate, N normal.
Intradermic Key—T thick, P 3-16'inch pea size swelling, N normal.

| Number | Age—Years | Amount Injected | SUBCUTANEOUS TEST | | | | | | | OPHTHALMIC TEST | | | | | INTRADERMIC TEST | | | | AUTOPSY REPORT | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | March 8, 1921 | | March 9, 1921 | | | | | Senstized March 5 Diagnostic March 9 | | | | | Injected March 5 | | | | May 4-5, 1921 | |
| | | | 3P | 6P | 5a | 7a | 9a | 11a | 1P | 3P | 9a | 10a | 12a | 2P | 4P | 48 | 78 | 96 | 120 | | |
| | | cc | | | | | | | | | | | | | | | | | | Held for retest | |
| 1 | 5½ | 6 | 12 | 16 | 34 | 34 | 44 | 40 | 28 | 30 | N | N | N | N | N | N | N | N | N | Held for retest | |
| 2 | 5 | 12 | 18 | 22 | 34 | 34 | 32 | 24 | 24 | 18 | N | N | N | N | N | N | N | N | N | Held for retest | |
| 3 | 6 | 12 | 28 | 28 | 30 | 30 | 32 | 26 | 30 | 26 | N | ½X | N | N | N | P2 | P2 | P1 | P1 | Held for retest | |
| 4 | 8 | 12 | 20 | 22 | 16 | 22 | 26 | 18 | 24 | 18 | N | ½X | N | N | N | P2 | P3 | P2 | P10 | Held for retest | |
| 5 | 8 | 12 | 22 | 30 | 38 | 40 | 40 | 34 | 48 | 40 | L | ½X | N | N | N | N | N | N | N | Held for retest | |
| 6 | 9 | 20 | 20 | 26 | 28 | 30 | 30 | 34 | 30 | 28 | N | L | N | ½X | N | N | N | N | N | | Pathological Lab. Report |
| | Retest 6 weeks later | | | | | | | | | | | | | | | | | | | Not slaughtered | |
| 1 | | | | | | | | | | | N | N | N | N | N | N | | N | | No lesions | Negative |
| | | | | | | | | | | | L | H | ½X | X | XX | N | | N | | Skin lesions | Positive |
| 2 | | | | | | | | | | | L | H | X | X | X | T | | T | | Not slaughtered | Positive |
| 3 | | | | | | | | | | | N | N | N | N | N | N | | N | | Skin lesions | Positive |
| 4 | | | | | | | | | | | N | L | X | X | X | T | | T | | Emaciation | Positive |
| 5 | | | | | | | | | | | N | L | H | X | XX | T | | T | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | |

For practicability and economy this combination is undoubtedly the most desirable. From the table it will be noted that the ophthalmic and intradermic methods in combination check together in an admirable manner; occasionally, however, there will be some animals which react to one method and not to the other. It is difficult to determine which of the two shall be credited with the higher efficiency. I believe that errors on one side or the other are due largely to error in judgment on the part of the veterinarian or his lack of experience in the interpretation of reaction.

**How the Combination Is Applied.**

For the purpose of economy it probably is best to give the intradermic injection and the ophthalmic sensitization treatment at the same time. The owner also will be better satisfied if he is not called upon to restrain the animals at two successive periods for the treatment with tuberculin. About 48 hours after the treatment the first intradermic observation should be made. Another observation for intradermic reaction should be made at 72 hours when the second or diagnostic ophthalmic treatment should be given. Ophthalmic observation should be made hourly ranging over a period of eight hours after the diagnostic tablet was given. If there is a tendency for some animals to show ophthalmic disturbance at the eighth hour an additional tablet may be given and observations continued; likewise if there are suspicious swellings at the seat of the intradermic injection later observations should be made preferably at the 96th or 120th hours or even later; also an additional injection of intradermic tuberculin may be given in the opposite fold, oftimes with splendid results. The limitations of this combination depend much upon the veterinarian applying the test. A careful and studious veterinarian should be able to completely exterminate tuberculosis from a herd in the successive employment of the combination test.

**The Subcutaneous and Intradermic Combination.**

Table D shows results of work under group 4.

TABLE D.

| | |
|---|---|
| Number of lots tested | 37 |
| Total number cattle tested | 613 |
| Total number reactors found both tests | 5 |
| Number reacting to subcutaneous test but not to intradermic test | 1 |
| Number reacting to intradermic but not to the subcutaneous test | 4 |
| Number of subcutaneous reactors showing no visible lesions on autopsy | 0 |
| Number of intradermic reactors showing no visible lesions on autopsy | 2 |
| Number reacting to both tests showing no visible lesions on autopsy | 0 |

This combination as will be noted in the above table has not been extensively employed in Vermont. For reasons enumerated this combination is not a practical one:

(1) Not economical on account of considerable extra time involved in making the test.

(2) Danger of "blocking" subcutaneous method by heavy dosage of intradermic tuberculin.

(3) Danger of "blocking" intradermic method by injecting subcutaneous tuberculin before the intradermic observations have been completed.

If this combination is employed it is recommended that the intradermic injection of two drops of concentrated or regular intradermic tuberculin be given very superficially. An observation may be made at the 48th hour. Another intradermic observation should be made at about the 80th hour at which time the initial temperature may be taken preparatory to the injection of subcutaneous tuberculin. The subcutaneous tuberculin test should then be carried out in the usual manner at the conclusion of which another intradermic observation should be made.

**Some Difficult Tests.**

Combination tuberculin testing does not in every instance give definite and conclusive results. Occasionally one meets with a herd where the most competent and experienced veterinarian will find it extremely difficult to make ready decision or interpretation of the results of his combination test. Several large pure-bred herds have come under our supervision during the past year and to which a combination test was applied. A number of the animals gave very atypical or suspicious reaction to each test applied either singly or in combination. Some of the animals were slaughtered and no very typical and characteristic lesions could be found in a number of the animals. Some showed very slight lesions in the liver and mesenteric nodes resembling de-

generated parasites. Others showed caseo-calcareous areas in the skin and in the fascia underneath the skin. Some showed lesions in the udder resembling tuberculosis. A few showed lesions elsewhere.

Tissues were forwarded to the pathological laboratory of the bureau in all cases and the reports on a number of the cases were returned as positive, the skin lesions were nearly all reported as positive. While others came back negative. While such cases are very discouraging to the veterinarian as well as to the owner, it is consoling in a measure, however, to know that the animals in question which failed to pass any combination test applied revealed on autopsy, lesions stimulating tubercular infection. Numerous skin lesions have been found in Vermont during the last two years, in animals giving atypical reaction, and a more satisfactory diagnosis can be made by the use of the combination, and a more satisfactory diagnosis can be made by the use of the combination methods in such cases than by any single method employed. Such cases usually give a low or suspicious reaction to any test applied, due undoubtedly to the chronic course the disease has assumed. Also the bacilli are probably more attenuated in the skin than in glandular tissue.

Veterinarians employing the various combination methods should be prepared to meet with difficult cases occasionally. The history of the herd should receive very careful study, also the history of individual animals showing atypical reaction. Oftimes it is advisable to class animals showing atypical reaction to each method as suspects and give combination retests later. I am bringing these cases to attention at this time so that veterinarians may not be led to believe as has already been expressed by some, that combination tuberculin testing has simplified the work to the extent that no doubtful cases will be found.

Table 1 and 2 shows some doubtful reaction in herds having skin lesions, also autopsy reports of the animals slaughtered.

In closing I wish to voice my appreciation for the very excellent service rendered by the members of my force in applying the various combination tests. Combination tuberculin testing as outlined in this report has succeeded in eradicating tuberculosis from our herds and the veterinarians who apply the test deserve the full credit for the accomplishment.

# Control of Infectious Abortion in Mares

By E. S. GOOD, Kentucky Experiment Station, Lexington, Ky.

THE disease of infectious abortion in the mare is caused by an organism differing widely in its morphological, physiological and pathological characteristics from the organism producing the disease in the cow. The organism causing the disease in the mare is a short plump bacillus belonging to sub group 2 of the colon-typhoid group for which we have suggested the name B. abortivo-equinus. It is a facultative anaerobe. The germ causing the disease in the cow, B. abortus (Bang) is polymorphic, measuring about one-half micron in width to one to two microns in length. At first it can be grown only in a partial atmospheric pressure of oxygen.

**Control of the Disease in the Mare.**

Up to the present time we have isolated this germ causing the disease in the mare from fifteen studs of aborting mares in this state. Our observations and experiments lead us to believe that the mare is usually infected through ingestion of grass or other material soiled with material from an aborting mare, the germs being absorbed into the blood stream through the intestinal wall, conveyed to the uterus where the fetus is destroyed and the mare aborts. The incubation stage in our investigation where mares were artificially infected by intravenous inoculation and by feeding was from ten to twenty days.

Fortunately the germ causing this disease falls within a group which when killed at a low temperature and injected into a mare at regular and increasing doses, produces a sufficient number of antibodies in the mare to protect her from an invasion of the live organism. We have now been experimenting in the immunization of mares against this disease for the past six years with good success. This past season some 600 Thoroughbred and Standardbred mares in the Blue Grass region were vaccinated against this disease by a bacterin prepared at the experiment station laboratories. A part of the field work was done

by ourselves but mostly by veterinary practitioners in Lexington. As far as we can determine the results were excellent.

While we do advocate the vaccination of mares which have not aborted in a stud where the disease exists, it is far better to vaccinate the herd before the malady has made its appearance. If the disease has a foohold in a stud, the mares which have not aborted should be separated from those which have and put of a field where no abortions have occurred. The well mares can then be immunized by a series of vaccinations and returned to the other mares, if desired, eight days after the last injection of the bacterin.

It must be remembered that the treatment is a preventive and not a cure. If a mare should be infected at the time of treatment she will in all probability abort. It is the best plan to follow the practice of vaccinating mares yearly as a prophylactic measure. At the present time we recommend that mares be treated four times eight days apart by injecting subcutaneously 1 cc. of the bacterin for the first treatment; 2 cc. for the second; 3 cc. for the third and 4 cc. of a double strength bacterin for the fourth treatment. The bacterin is injected subcutaneously in the region of the neck. It can be injected into the muscle by means of a short needle, if desired. The mare usually manifests some lameness for a day or two after the injection. It is needless to say that the injection should be done under aseptic condition. The needle and syringe we use is first sterilized either by boiling or by soaking in a 5 percent solution of carbolic acid for two hours. Tincture of iodin is applied at the seat of inoculation and the needle wiped with the same solution after each inoculation In a word careful antiseptic precautions are observed.

We recommend that the mare be immunized by the method stated above during the fourth month of gestation or even earlier in pregnancy as the immunity so built up will protect the mare until foaling time. The immunity conferred however runs out in several months' time, therefore it is imperative that the mare be immunized each season that she is carrying a colt.

# The Use of Camphor in Thermic Fever or Heat Stroke

By D. W. Marks, M. D. C., Chicago, Ill.

THE term "thermic fever" will be used in this article to indicate that condition referred to as sunstroke, heat stroke, insolation, ictus solis, heat prostration and overheating—a condition which is associated with high body temperature and generally followed by prostration, insensibility, coma, and very often death.

It was at one time thought that the sun's direct rays caused those nervous disturbances which are so often fatal but it is now a well known fact that the direct rays of the sun are not necessary to produce thermic fever since the same symptoms may develop without exposure to the sun, excessive heat apparently being the important factor, together with a high degree of humidity. In the great Southwest atmospheric temperatures often attain unbelievable heights but comparatively few prostrations result because the humidity is relatively low. In that stretch of country lying east of the Missouri river between our northern frontier and the Ohio river the humidity is much higher and although the atmospheric temperature does not become as excessive as in the Southwest, nevertheless, the results of this temperature are more disastrous because radiation or elimination of body heat is not accomplished rapidly enough. The greater the relative humidity, that is to say, the more nearly the air is saturated with moisture, the less it is able to take up moisture from the animal tissues. Cooling of the body is chiefly caused by the sweat absorbing body heat at the time the sweat changes from the liquid to the gaseous state (evaporation). Therefore, it follows that the relative humidity at the time the atmospheric temperature is nearly that of the body is the important factor in the production of thermic fever. Beside this we must consider the constant factor that combustion of foods and body tissues in the animal body continues and since it is not possible for the resulting heat to be cast off

through radiation to the usual extent, excessive stimulation of the heat center in the brain follows which induces the clinical picture I refer to as thermic fever.

As secondary causes we must of course consider that overwork, fatigue and constipation play very important parts in producing this condition.

As a result the animal will become depressed, lose its equilibrium so that stumbling and an unsteady gait is observed; more or less profuse sweating develops and respiration becomes accelerated and shallow. The pulse is also accelerated and weak and the body temperature rises very high, often higher than 110 degrees F., but ordinarily up to 105 to 107 degrees F. Those cases in which the temperature is lower are not as a rule brought to a veterinarian's attention, as they usually recover of their own accord, but the more severe cases develop cerebral symptoms resulting in the animal falling to the street and violently tossing himself about (mania).

Complete coma may result, the animal never regaining consciousness and in a short time dying. In my experience the blood is very dark and thickened, semi-coagulated. In the later stages the mucosae become pale or even bluish.

The question of differentiating this condition from other diseases such as acute infections especially septicemias, encephalitis, relapses of chronic hydrocephalus and epilepsy, congestion or edema of the lungs is very important but at the same time one should be able to distinguish between these and thermic fever. The last two mentioned conditions may result from heat stroke, which should never be overlooked.

The treatment of thermic fever consists in the main of reducing the high temperature and stimulating the heart and respirations. When ever possible the animal should be placed in as cool a place as can be found. Cold water or ice, if possible, should be applied to the head; cold water should also be poured over the limbs and body. To stimulate the heart and respirations camphor should be used. In the past I have been accustomed to using camphorated oil but lately I have only used Camphosol (made by the Zell-Straub Laboratories, Chicago), which has given me much better results. Camphosol being an aqueous solution of camphor is absorbed much faster than camphorated oil and the physiological effect of the camphor is observed much quicker and more effectively. It is in my opinion the ideal way in which to give camphor, on account of the rapid action obtained and also because the syringe does not become smeary and sticky from any oil. I also usually use acetanilid and aromatic spirits of ammonia but in the following cases I feel confident that my good results were due to the rapid action I was able to get from Camphosol.

Case 1—June 25, 1921, a 7-year-old grey, blind, Percheron gelding, weighing 1,400 pounds, was ordered on a six-mile drive to Cicero, a suburb of Chicago. At 11:30 a. m. I was called and told that the horse was beginning to become weak and show signs of collapse. It was advised that the horse be stopped and the harness removed. At 12:30 p. m. I was called again and told that the horse was down and throwing himself violently against the pavement. I instructed that ice be applied to his head and that his mouth, head and feet be sponged with cold water until I arrived. Upon reaching the scene I found the horse still violently throwing himself around and unable to stand. His temperature was 107° F. and his pulse over 95 and breathing quickened and labored. He was given as a drench one ounce of aromatic spirits of ammonia and two drams acetanilid in a pint of water. Subcutaneously I gave him 15 cc. Camphosol. Within 15 minutes the horse was on his feet and from then on improved. His temperature became lower and at 3 p. m. he drank 3 gallons of water. At 5:30 p. m. his temperature was down to 104° F. and it was considered safe to put on his harness and that he be taken home. This was done, he walking the entire six miles uninterruptedly, arriving home at 7:30 that evening. He was given an ounce of alcohol with ginger in water and sent to the barn where he proceeded to eat hay as if nothing had happened. In the morning his temperature was normal but physically he was weak. Recovery was complete.

Case 2—July 5, 1921, a bay gelding, 12 to 14 years old of the chunky type weighing about 1.000 pounds was reported down. My first visit to him was at 8 p. m. He was down on the street and restless lying on his right side. His temperature was 107° F. and his pulse very rapid but weak and his respirations very fast. Beside acetanilid and aromatic spirits of ammonia I gave him 20 cc. Camphosol subcutaneously. I had to make another call so that I did not see him again

until 9:30 p. m. This time he was up on his sternum and his temperature down to 103.5° F. He felt better and drank water. I again saw him at 10:30 p. m. and found him still up on his sternum. He drank more water. At midnight he still could not walk so I ordered him home in an ambulance. Upon his arrival there he got upon his feet within 15 minutes and has been improving ever since and is now practically ready for work.

Case 3—July 6, 1921, a 4-year-old black Percheron gelding, weighing about 1,500 pounds was reported down. When I saw him he was down and throwing himself violently against the floor. His temperature was higher than 110° F., but it was impossible to determine just how high it was since my thermometer would only register up to 110°. This was at 7 p. m. I bled him from the jugular and found his blood very dark and thick. His beathing was very bad. One could see that he was in a serious condition and I so told the owner. I gave the horse 20 cc. Camphosol subcutaneously besides 2 drams acetanilid and one ounce aromatic spirits or ammonia as a drench in a pint of water. He improved for awhile but the owner informed me the next day that the horse died that morning at 5 o'clock. I believe had I been able to give this horse another injection of Camphosol that evening or night that he might have recovered.

Case 4—July 7, 1921, a 1,300-pound Montana type horse (bronco) that I was informed had been down on the street several hours thrashing around. I visited him at 6 p. m. and found him lying on his chest. His temperature was a little over 105° F., pulse rapid and weak as was also his respirations. I gave him nothing but 15 cc. Camphosol subcutaneously and in a short time he was on his feet and the owner informed me made a rapid and complete recovery.

# The Application of the Different Tuberculin Tests in Cattle*

By W. H. SIMMONS, State Veterinarian, Frankfort, Ky.

**Subcutaneous (Thermic) Tuberculin Test.**

BEFORE applying the test the normal temperature of the animal should be determined by taking at least three readings two hours apart during the day on which the tuberculin is given. For instance, commencing at 4 p. m. and every two hours thereafter or until 8 p. m.; inject the tuberculin at 8 p. m. (or 10 p. m.). Begin reading at either 4 a. m. or 6 a. m. (or eight hours after injection), two hours apart until six reading have been taken.

DOSAGE—The dose of tuberculin injected for adult and medium sized animals is 4 CC or 0.5 grams O. T. (old tuberculin). The dose should be regulated according to age and size of animal.

DIRECTIONS—The injection is made with a previously sterilized hypodermic syringe and needles under the loose skin in the region of the neck or axilla. At the point of injection the skin should be cleansed with a good antiseptic solution. Extra needles kept in antiseptic solution. A rise of 2° F. above the highest normal or pre-injection temperature indicates tuberculosis. The typical reaction consists of a gradual rise of temperature beginning about eight hours after injection and followed by continued high readings for a few hours and then a gradual decline. The rise varies from 2° to 4° F. above the normal temperature. If the temperature is rising at this time it is necessary to continue readings until a definite conclusion is reached. During the time test is being made the animals should be free from excitement, also protected from extreme heat or cold. Animals should be tied up or placed in stanchions a short time before temperature readings to allow them to become quiet. They should be fed and watered as usual but the water should not be too cold and animals should not be watered immediately before a temperature reading is made or exposed to the sun's rays on a hot day. It is never advisable to inject an animal with high preliminary temperature as no definite conclusion can be reached afterwards. The accuracy of the test is influenced where tuberculin has been recently injected or where the animal has been repeatedly treated with it. Subcutaneous

*Read at annual meeting Kentucky Veterinary Medical Association, July 6-8, 1921.

tuberculin should never be injected until sixty days at least have elapsed since the latest previous injection.

**Intradermal (Intracutaneous) Tuberculin Test.**

DOSAGE—Two to four drops of 0.1 to 0.2 of a cc.

DIRECTIONS—The injection is made with a previously sterilized hypodermic syringe with a short small gage needle into the caudal fold at a point where the fold merges with the tail is most favorable. It is absolutely essential that the injection be made between the layers of the skin and not under the skin. If the injection is properly made a swelling the size of a small pea should appear immediately at the point of injection.

REACTION—This manifests itself in the form of a firm, sensitive, well defined, circumscribed swelling varying in size from a hazelnut to that of a hen's egg. In exceptional cases the swelling appears diffused involving the entire caudal fold. Sometimes at the forty-eighth hour a reactor will show a slight swelling, but it will always persist at the seventy-second hour (and often later) and is generally more pronounced at that time. It is advisable to examine the animals at any time between thirty-sixth and seventy-second hour and typical swelling noted at that time should be considered a positive reaction. For recording reactions to the intradermic test the following code was adopted by the U. S. Live Stock Sanitary Association. Two sets of symbols are used in designating the two kinds of swellings.

**Circumscribed Swellings**—Pea sized (diameter 3/16 inch) shall be used as the basic standard, larger swellings shall be recorded as P 2, P 3, P 4, etc., referring to twice, thrice or four times the size of a pea.

**Diffused Swellings**—Thick 2 X shall be used as basic standard and signifies a diffuse swellings in which the injected caudal fold is twice as thick as the normal fold. Larger swellings shall be recorded as Thick 3 X, Thick 4 X, etc.

Animals showing no reaction shall be recorded at each observation as N signifying negative. If only one observation is possible this should be made at the seventy-second hour after injection. If two observations are made these should be at the forty-eighth and the ninety-sixth hour respectively. More frequent observations may be made under special conditions.

**Ophthalmic Tuberculin Test.**

This test is generally used as a check on animals that have been repeatedly injected subcutaneously.

DIRECTIONS—The ophthalmic disc is placed into the fornix by gently raising the upper lateral lid of the left eye with the left thumb and forefinger. The disc held between the extreme points of the thumb and forefinger of the right hand can be pushed up under the lid into the fornix with such ease that the animal will scarcely flinch. The head of the animal should be held, however, by an attendant while the operator is at work. When the disc has been placed in proper position the finger and thumb of the left hand should bring the upper and lower lids into apposition with each other and hold the eye of the animal perfectly quiet for a short time giving the tablet time to dissolve, then massaging gently for a moment by rotating the skin toward the lateral angle so as to carry the tuberculin in the closed conjunctival sac away from the inner canthus as much as possible. This operation will treat the entire conjunctiva.

Great care must be exercised that the tablet is not worked out of the eye. The tablet should not be placed into the inner angle of the eye because the proper tissue structure cannot be treated there also the membrane nictatans whose function it is to remove foreign bodies would remove much of the tuberculin before proper treatment had been effected. This is the first treatment for the purpose of sensitization and must be followed by a diagnostic dose after the expiration of about 72 hours, some operators use two discs on the second treatment but good results may be accomplished by the use of only one disc, and examination at intervals for evidence of a reaction. A marked reaction to the ophthalmic test may be in evidence as early as six hours after the application of the diagnostic disc or discs, and is characterized by a purulent discharge from the inner canthus of the eye. No attention should be paid to a watery discharge and nothing short of a purulent discharge should be construed as indicating a positive reaction. The conjunctiva is usually very much reddened and especially the membrane nictatans. The untreated eye serves as a check or control. The reaction will persist for a variable length of time. Several ob-

servations should be made between the sixth and twenty-fourth hour after the application of the tuberculin. In recording reactions to the ophthalmic test the following symbols should be used. PX meaning slight, XX well marked, XXX very extensive or copious exudation. Animals showing no reaction should be recorded at each observation as N (negative).

**Subcutaneous Ophthalmic Combination.**

When animals are tied or placed in stanchions apply sensitizing ophthalmic disc according to previous directions then apply diagnostic disc or discs eight (8) hours after the injection of subcutaneous tuberculin, or immediately after making the first post temperature reading, making temperature reading and observations as previously described. From the experience we have had, the subcutaneous tuberculin excites the action of the disc if the animal is tuberculous, giving a typical reaction by the time of the sixth post injection readings. Observations are made at each temperature reading.

**Intradermic and Ophthalmic Tests.**

Inject tuberculin and instill sensitizing disc. About 66 to 72 hours later instill the diagnostic ophthalmic disc or discs. Make first observation about three hours after instillation and every hour or two after up to eight hours or more according to condition.

A good deal of care and consideration should be given to the application of these tuberculin tests as it is of great importance to this great work. Many phases of the manner of carrying out the test is very forcibly brought to our attention and in the words of a prominent veterinarian, "some are good, some indifferent and many that are considered absolutely bad." Many of our local veterinary practioners make careful and conscientious tests, taking an active interest in this work thereby rendering a great service to the state and the cattle industry. Some go on with the work without any regard to the proper technic or interest in the test. If careful attention is paid to the details of the work you will render good service to your client, your state and also to the cattle industry in general.

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Sanitary instruction is even more important than sanitary legislation and is the natural predecessor of it. Legislation is not a panacea for all our ills or for any of them unless supported by an enlightened public sentiment.

## VALUE OF HEMORRHAGIC SEPTICEMIA PORCINE BACTERINS IN RABBITS.

Since the specifity of hemorrhagic bacterins in the treatment and prevention of Pasteurella infections in swine cannot be precisely interpreted in field results by the practitioner, information obtained in experimental animals may be of interest in this connection. Healthy rabbits in groups of twelve and twenty-four have been injected one or more times with hemorrhagic septicemia bacterins prepared in the Laboratory of Animal Pathology, at the University of Illinois, Urbana, as well as nine samples of commercial bacterins obtained in the open market. Following one or more injections of the bacterins the animals were exposed to the unattenuated virus. Control or untreated animals were left in each case.

General deductions, based upon the results in these tests which involve the use of approximately 1,000 rabbits and guinea pigs, suggest that immunity in rabbits against virulent Pasteurella suiseptica is not provided by injecting bacterins prepared from the strains involved in these tests. Bacterins prepared from stock virus, used to expose the rabbits in all tests, apparently possessed no advantage over the commercially prepared products. If the basic resistance of the experimental animals was increased by the injections of bacterins it could not be detected or observed in the animals upon exposure as expressed in terms of resistance.

It seems apparent that the implied immunity produced in swine by injecting hemorrhagic septicemia bacterins is not confirmed in rabbits by a similar procedure, though negative conclusions from immunological studies in one species of animals cannot safely be interpreted for another species. However, if the results in rabbits are indicative, the procedure of injecting bacterins in the treatment of swine plague may be fundamentally incorrect and subject to modification and improvement in keeping with certain fundamental biochemic characters of the Pasteurella group.

So far as could be observed no injurious effect followed the injection of porcine hemorrhagic septicemia bacterins in rabbits, though in no case did injected rabbits survive exposure or exhibit phenomena resembling increased resistance. The fate of an immunizing product which does not confer immunity or possess immunizing property is obvious.

## DRAGON HEAD SUSPECTED OF BEING POISONOUS.

Dr. Don E. Fish of Mt. Pleasant, Iowa, an efficient county agent, sent to the writer a request for information as to whether the green dragon or dragon root (Arisaema Dracontium) could cause poisoning. It was observed by him in a pasture where several animals were poisoned.

Green dragon is related to the common Indian turnip (Arisaema triphyllum). The Indian Turnip has a greenish spotted spathe and a leaf of three leaflets, the spathe coming over like a hood. The corms are solid and acrid. The leaf of the green dragon, on the other hand, has 7 to 11 leaflets and the spadix (central part of the plant bearing the flowers) has a long tapering point. The plant also produces corms. The symptoms of the animals could only be gleaned from the farmer who said the animal staggered. Are these two closely related plants poisonous? The corms, leaves and blooms of the plant are very acrid like many aroids, the Indian turnip being violently acrid. The European arum to which these plants are related is a violent irritant to the mucous membrances, producing, when chewed in the mouth, a burning sensation. Like the American plant, the European arum when taken internally has produced violent gastro-enteritis and death.

It does not follow from all this that the dragon head will produce death. However, it appears that the tops of the plants were eaten off. It seemed to me worth while to record the fact that it was suspected of being pisnus.—L. H. P.

## PREVENTING LOSSES FROM DEATH CAMAS IN SHEEP.

Death camas causes heavy losses of sheep in the spring and early summer. It is not unusual for several hundred to die within a day or two. The plants frequently grow in thick patches, and because of their grasslike leaves are overlooked. If sheep are close-herded in such places many of them will be poisoned, and most of those poisoned are likely to die.

Especial care should be used when sheep are taken from the cars and released for grazing. If they have not been fed, as is frequently the case, and are turned out on a range where death camas is abundant, the resulting losses may be very heavy. There have been many cases of this kind. If death camas is present that part of the range should be avoided. If it is necessary to trail sheep where death camas is known to grow, the animals should be well fed before coming to that place.

Sheep herders should learn to recognize the plants and avoid them. The United States Department of Agriculture has published Department Bulletin 125, on "Zygadenus, or Death Camas," which tells about the plants and their effects; it has also published Bulletin 575, "Stock Poisoning Plants of the Range," which gives illustrations of the principal poisonous plants of the western United States.

There are several kinds of death camas and until recently it has been supposed that all were equally poisonous. As the result of recent experimental work, which is in course of publication, it has been found that the death camas which in the western mountains grows at elevations of 8,000 feet and upwards is only slightly poisonous and probably never injures range sheep. All the forms growing at lower altitudes are dangerous, but this mountain death camas probably never does any harm. It has thin and rather erect leaves, grows in meadows and in damp ground, sometimes among the aspens, while the other kind, which approaches the lower limit of the mountain death camas, grows in dry places, and has thick, spreading leaves. The herder need not fear the mountain death camas, but should shun all the other forms.—L. H. P.

## PERTINENT PARAGRAPHS FROM THE VETERINARY NEWS.—LONDON.

Now there are medical quacks, herbalist prescribers, bone-setters, Christian scientists, and such like in every large center where duly qualified medical practitioners, often with high university degrees, abound. There would be more quacks than there are, but the "death certificate" stares those who would otherwise employ them or would be employed in the face. That is one great factor in favor of the medical man over the veterinary surgeon or dental surgeon.

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The only learned profession that is absolutely protected is the legal,* as its members are officers of the High Court of Justice. On the other hand, a solicitor cannot demand fees or make charges beyond a certain scale. This is in consequence of his monopoly. Nobody but a licensed solicitor can imply he is a lawyer or usurp his function.

*The writer of course refers to conditions in Great Britain.

# Abstracts of Foreign Literature

*Edited by A. EICHHORN, D. V. S.*

**The Envolvement of the Udder in Generalized Tuberculosis.**

Dr. G. Fluckiger (Schweizer Arch. f. Tierh., Vol. 62, No. 5).

Fluckiger established in his investigations at the abattoir at Bern that tuberculosis of the udder occurs more frequently among the cows of Swiss breeds, especially so among those of the Simmental breed than among the other breeds. In considering the publications of Thoni whereby in the market milk of Bern, tubercle bacilli are present in not less than 8 percent of the samples and according to Ostertag that in human tuberculosis of the cervical and mesenteric lymph glands and also in intestinal tuberculosis of the human, the bovine type of the tubercle bacillus must be considered in at least 50 percent of the cases as the responsible factor, therefore the frequent involvement of the udder with tuberculoses is of the greatest importance. Accordingly, Fluckiger recommends very energetic measures for the control of this condition.

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**Veterinary Faculty in South Africa.**

South Africa is now determined to take in their own hands the education of veterinarians, as they are of the opinion that on account of the conditions prevailing in Africa the veterinary students should positively be educated in South Africa. It is recommended that the already existing universities should with their equipment participate in the education of the veterinarians and furthermore that a course extending over five years should be inaugurated. The first two years of this could be spent at any university or academy for the purpose of obtaining the necessary knowledge in natural sciences as well as in anatomy and physiology. The last three years would be devoted to special studies in veterinary subjects. Finally, means would be also provided for the African veterinarians to obtain his doctor degree.

It is intended that the research institute of Onderste-Poort near Pretoria be converted into a veterinary faculty and constitute an integral part of the university. The teaching staff should at the same time conduct the research work of the institute. The position of directorship has been offered to Sir Arnold Theiler.

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**The Australian Sheep Industry.**

On account of the drought the sheep industry in Australia suffered a great deal. In some localities of New South Wales there was no rain for two years and as a result they went through very hard times. At one station in the Reverina 70 men were employed to skin the dead sheep. Since one man is able to skin 100 sheep a day, one can readily conceive the enormity of the losses. Although early in July it commenced to rain there is very little hope to replenish the sheep to their former numbers, especially since abortion occurs frequently in the debilitated ewes. The mortality is also large among the lambs as the ewes have not sufficient milk for them. The inadequate nourishment during the drought period will also result in an inferior quality of wool.

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**The Live Stock of Paraguay.**

The total number of living live stock in Paraguay which constitutes the principal economical asset of the country is, according to the commerce reports at the present time as follows:

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|---|---|
| Cattle | 2,500,000 |
| Goats | 85,000 |
| Sheep | 600,000 |
| Hogs | 600,000 |
| Horses | 470,000 |
| Mules and Donkeys | 30,000 |

The animals in general are of inferior breeds and very little effort is made to improve them by introducing pure-bred animals. The cattle are small and they suffer a great deal from ticks. Destructive animal diseases are unknown (?). From time to time foot-and-mouth disease and anthrax make their appearance. Horses suffer principally from mal de caderas which causes death of the animal within a short time.

**Veterinary Activity in the War in German East Africa.**

Dr. Ruppert and Dr. Huber (D. T. W. No. 38 and 39, 1920).

After introductory remarks of a military nature and discussions on the methods of supplying the troops with meat, providing of the necessary drugs, caring and nursing of the animals, the authors discuss the diseases which especially threatened the animals.

The most destructive was the tsetse disease (trypanosomiasis). Good results were obtained in this disease from the prophylactic treatment with atoxyl which was injected into the mules in doses of 50 cc. of a 10 percent solution five days before and five and ten days after they were brought on to the infected territories. Later when this preparation became scarce two grams of atoxyl was administered on the tenth and eleventh days and in case the symptoms of the disease appeared two grams of tart. stib. was also given. The examination revealed not only trypanosoma brucei but also trypanosoma congolense, dimorphon, simiae and pecorum; of the glossinae were found the Glossina palpalis, morsitans, fusca, tachinoides and pallidipes.

East African horse sickness caused a great deal of suffering among the solipeds. Accepting that this disease is caused by an ultra visible agent and that it is transmitted by a small insect swarming during the night, Wolfel built a completely tight stable of clay in which the ventilation was obtained only through the straw roof.

In this stable the animals were housed from 6 o'clock in the evening until 8 the next morning. While in the immediate surrounding of this stable the disease continued to rage, the infection ceased immediately among the animals kept in such stables. After establishing a case of East African coast fever, a disease which causes death of 95 percent of all susceptible animals the infection was successfully controlled by dipping all animals of the herd every five days in a solution consisting of 100 liters of water and one kilogram of arsenic, which successfully destroyed the ticks. After dipping, the animals were placed on a fenced pasture which, according to Theiler's control measures was changed twice.

Of the other infectious disease, glanders, epizootic lymphangitis, infecious conjunctivitis, piroplasmosis, anthrax, rinderpest, pox, which inside of a few weeks killed 40 percent of the small animals, were discussed.

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**Diagnosis of Sharp Foreign Bodies in the Stomach of Cattle.**

Dr. Kreutzer (Arch. f. Wiss. u. Prakt. Tierh., Vol. 46, No. 1).

After discussing the usual methods of examination for the demonstration of foreign bodies in the stomach of cattle, which, however, are not sufficient for an early diagnosis, the author takes up the simple description of traumatic gastritis and its sequel in cattle. Cattle after the ingestion of sharp foreign bodies manifest more or less pronounced symptoms (elevated temperature, accelerated respiration, frequent pulse, diminished appetite, stomach and intestinal paralysis, manifestations of pain) which frequently suggest only a slight indigestion appear in from 12 to 24 hours after the swallowing of the foreign body, reach their height in from 2 to 3 days and then rapidly disappear without leaving any apparent symptoms.

If such foreign bodies remain in the stomach they may be demonstrated by chemcial tests. If the foreign body is of iron and not too small, its presence might be established from the pumped out stomach contents. The normal contents of the rumen and reticulum have a slight to a distinct iron reaction which becomes even more prominent after the administration of acetic or the more intensely acting hydrochloric acid. Normal contents of the rumen and reticulum in which an iron nail has been lodged for a longer time gave after the addition of lactic or hydrochloric acid a very pronounced up to a very strong iron reaction. The testing of the feces and urine for iron is of no consequence.

With the aid of electrolytic procedure a sufficient amount of iron may be obtained from the normal contents of the rumen and reticulum to make its chemical demonstration possible; a slight reaction becomes more distinct by administering acetic or hydrochloric acid into the stomach. A strong or very pronounced reaction indicates the presence of a foreign body containing iron in the stomach. The demonstration of such foreign bodies in the stomach of cattle with the aid of magnetic apparatuses has been thus far unsuccessful.

Exploratory rumenotony has been successful in diagnosing some cases and is of limited usefulness.

## ETIOLOGY OF WARTS.

The findings of Wile and Kingery (J. A. M. A., Sept. 27, 1919) that warts are infectious conditions due to a filtrable virus, is substantiated by subsequent experiments of Lyle B. Kingery (J. A. M. A., Feb. 12, 1921) in which it was shown that experimentally produced warts were found to retain their infectiousness.

Ordinary warts curetted and made into an emulsion with saline solution and passed through the finest Berkefeld filter were injected intradermally into different human subjects, with positive results after an incubation period of four to eight weeks. Some of the lesions developed to a certain size and then remained stationary, some underwent spontaneous involution, while others grew to the size of a pea. Removed for histologic study, these growths were found to score identically with common warts. In fact the clinical and pathological similarity was established. Reproduction of a second generation from the experimentally made wart by the same process seems to have demonstrated the origin of common warts beyond the question of doubt.

### Blood from Recovered Animals.

Ludwig. (Schvezer. Arch. f. Tierh., Vol. 62, p. 8).

The author employed this form of treatment on various premises infected with foot-and-mouth disease. His success appeared to be highly satisfactory. The blood was obtained from animals which had recovered from the disease for about 14 days. Later bleedings are not advantageous as the immunity soon disappears. The administration of the defibrinated blood was made subcutaneously or intravenously. According to the opinion of the authors the method of administration has no effect upon the infection. The dose for healthy animals is 500 cc. and for those infected 700 to 800 cc.

### Anthrax in Hogs.

Graul. (Berl. Tier. Woch., 1919, page 296).

Following a change of food in a herd of swine (46 animals) they became slow in feeding. Some of them showed at the same time swelling around the throat. In six emergency slaughtered animals the examination revealed gelatinous infiltration around the pharynx, diphtheritic changes on the mucous membrane of the larynx and a mottled red coloration on the regional lymph glands. Two other hogs died of pronounced gloss anthrax. Three others recovered following the injection of 25 cc. of anti-anthrax serum. The source of infection could not be established.

### The Development and Control of Pleuropneumonia in Horses.

Dr. Vaxberg (Svensk. Veterinar., 1920, p. 105).

The author collected statistics on a great number of enzootics in army horses in relation to the source of infection and incubation period and he also recommends measures for the prevention of the infection. He concludes that the virus is generally transmitted to horses by virus carriers and that the infection by persons, straw, feed and water plays only a subordinating part. The incubation period varies between nine days and two and one-half months. In order to avoid the infection, the author recommends very strict isolation and no horse should be brought into a stable unless it has been proven that the animal was for at least three months in a stable which was free from the infection. The publication contains also a series of very interesting tables and statistical compilations.

### Deaths in Horses from Electricity.

Dr. Gauger (Zeitsch. f. Vet. Kunde, No. 9, 1920).

Through an unfortunate accident, probably as a result of imperfect insulation, an electric current from a line running along the stable passed into the stable in which through the mesh wire and iron construction it passed into the halter chains and killed 22 horses. The lesions disclosed by the horses were as follows: In practically every horse the head was turned to the side; there was a paralysis of the penis and anus. In two mares there was a prolapse of the uterus; the visible mucous membranes were in all cases very pale. Most horses appeared as if they broke down instantaneously after the electrocution. The autopsy on two horses disclosed a pronounced anemia in the blood vessels of the skin and subcutaneous tissues. The internal organs showed no changes. Both ventricles contained about one liter of blackish red blood coagulum. There was a pronounced bloating and considerable extension of the intestines with putrefactive gases. The basilary vessels of the brain were markedly congested. The strength of the current was supposed to have been 2,200 volts.

# Veterinary Surgery

*Edited by L. A. MERILLAT, V.S.*

## Iodin Fumigation as a Method of Treating Wounds

By Professors Hebrant and Antoine, Annales de Medicine Veterinaire, February, 1921.

Of all the antiseptic agents at the disposal of the veterinarian iodin is doubtless one of the most active and one whose action is strikingly defined.

It is a powerful antiseptic, acting as a violent poison to microbes and parasites. It has the advantage of not attacking the tissues but of producing an active congestion favorable to the process of regeneration. Under its influence the tissues acquire a bright red coloration, and remaining dessicated cicatrize rapidly. Its solubility in fats give it a great penetrating power. The observations of Heusner and Gros have demonstrated the possibility of obtaining a rigorous preoperative asepsis of the skin without washing or lathering by the use of tincture of iodin.

In therapeutics the use of iodin in its metallic form may be questioned since it so easily produces the lesions of irritation and of cauterization of the skin and of wounds. The same may be said of tincture of iodin which, at 94 degrees C., is a 10 percent solution of iodin in ethylic alcohol. In this form iodin has rendered a great service but its employment presents some disadvantages. Locally to a wound it produces an intense pain through its alcohol, ultimately making its use in domestic animals difficult. Furthermore tincture of iodin is not good unless freshly prepared since in the course of a few days an iodric acid is formed in the liquid and being very caustic causes the accidents of intense irritation. Neither is it good unless made from rectified spirits. We also remember of numerous avatars who have manufactured it from other alcohols: methyl, amyl, or denatured ethyl alcohol. With the latter in particular the traces of ethylmethylic acetone added as a denaturant transforms the product into a lachrymogenous agent of great activity.

It was to cope with these disadvantages that Dr. Louge, in 1911, conceived the new method of iodin therapy based upon the action of iodin in its nascent state, which he called "enfumage iode" (iodin fumigation). Applied and experimented with by numerous physicians the method was preconized for veterinary medicine by our estimable confreres Lepinay and Chalut in 1912. It is from this date that we have used it in the clinic at Cureghem.

The generating product of the iodin is iodoform. One must not ignore the pharmacologic fact that it is very unstable and that by moderate heat it decomposes and elaborates the beautiful violet vapors of nascent iodin. The fumes, heavier than air, condense upon cold surfaces in the form of microscopic crystals or iodin. Thrown upon a wound it covers it with a fine antiseptic carpet. These iodin vapors have all the beneficient properties of tincture of iodin and besides possess the advantage of being painless and non-caustic. This nascent iodin according to numerous observations gathered from different authors and by us proves more promptly antiseptic, arrests suppuration more rapidly and the antiseptic action is more durable, persisting as if the fumes form combinations with the albuminous constituents of the wound that are liberated little by little.

In our domestic animals this method has permitted us, more than was formerly our custom, to treat wounds without bandages—an inestimable advantage in view of the difficulty of retaining them on the dog and cat.

With few exceptions all wounds treated by fumigation once a day or once every second day remain dry and cicatrize rapidly.

In summary, nascent iodin disposes itself in the form of an impalpable powder right into the smallest anfractuosities, destroying microbes that infest the wound, drying the surface and at the same time causing the useful congestion that brings the white cells necessary to the formation of cicatricial granulations and the restoration of the tissues.

The application is simple and the practitioner has the choice of the following procedures:

**Fumigation with a Tuft or Tampon.**

Fumigation with a tuft or tampon is done by simply setting fire to a wad of cotton previously infiltrated with iodoform and held with a pair of forceps. In calm air the iodine vapor rises slowly from the heat current and fumigates the region to be treated from below upward. If one cannot proceed in this manner the vapors can be projected against the wound by slowly moving the burning wad up and down. This method has the disadvantage of not limiting the action of the iodin and of fumigating only the surface.

Iodin Fumigation Apparatus

**Fumigation with a Pipette.**

Fumigating with a pipette can be employed in the following manner: Iodoform is introduced into the large end of a glass such as is used in bacteriology. The middle part of the tube is heated moderately and as the vapors are produced the operator blows the jet of fumes into the anfractuosities of the wound. This procedure is more elegant and is also more simple and effectual. In perfecting it we have been able to have a convenient apparatus constructed.

**The Fumigating Apparatus.**

To obtain a handier instrument and one more appropriate in the treatment of animals, often intractable, we have substituted the pipette with an improvised apparatus consisting of a Pasteur flask equipped with tubes on opposing sides. To these glass tubes were grafted. The flask is the receptacle in which the iodoform elaborates the vapors. These are blown from one of the tubes by a current of air produced with a rubber bulb blower attached to the other. The improvement was manifest the treatment becoming easier and better controlled but the great fragility of the glass induced us to replace the instrument with the more solidly constructed one shown in the illustration.

It is composed uniquely of a thick receptacle closed with a screw-cap and armed with two tubes opposite to each other. The one directed to the patient gives off the iodin fumes, the other to which a rubber bulb blower is attached serves to blow out the vapors. This apparatus made of nickel is very solid, stable and durable. It has been in service seven years and is just beginning to show usage from the eroding action of iodin. Recently our manufacturer has slightly modified our primitive instrument by substituting a large pure nickel tube for the flesk-shaped receptacle.

**Fumigation with a Cupping-Glass.**

The cupping glass may be used in anfractuous wounds of small dimensions. The application is simple. The wad of cotton destined to produce the rarefication of the air is previously coated with iodoform but the adherence of the cup is often difficult to maintain in the skin of hairy animals.

**Fumigation with a Thermocautery.**

This is the specjal method preconized by Mr Lepinay for line or puncture firing on the surface or in fistulous tracts. The region to be treated having been powdered with iodoform or the fistulous tract filled with it the thermocautery then produced its physical effects together with the therapeutic effects of nascent iodin. This method is best adapted to the treatment of large animals.

Since the last of 1912 fumigation with iodin has become the classical method of wound treatment in the clinic for small animals of the college at Curegham.

We treat all kinds of wounds by this method, accidental and post-operative consecutive to the numerous operations on the dog and cat. When, for example, the animal tears off the bandages and infects its wound we no longer make an effort to protect it, contenting ourselves with the fumigation and leaving the wound exposed.

We have obtained equally good results in the wounds of bones. The most interesting case we have treated was that of a shepherd dog with an infected compound fracture of the femur. It had already been treated with a fenestrated bandage with antiseptic care of the wound and in the face of failure amputation had been advised. Not agreeing to this the owner brought the patient to us daily. After a careful cleansing of the wound which had already become gangrenous the fumigations were administered and repeated each day. In six weeks there was a complete cure of both the wound and fracture with perfect functional integrity.

We treat the wounds of amputation and have nothing but praise for the results. We regard it unnecessary and fastidious to enumerate from the records the numerous cases in which we have employed the method. We recommend it highly to our confreres and although we have never had an accident we would nevertheless make some reservations in the treatment of large wounds on which the quantity of iodin, always consequential, might produce toxic phenomena.

## AMAROSIS FROM CHLORAL POISONING.

A client asked me for a blister to apply to a swelling on a horse. Later, the horse was brought to me for further treatment. An examination revealed a scirrhous cord, about four inches in diameter. Surgical intervention was thought to be the proper procedure, although I knew that tumor extended well up into the inguinal canal.

The animal was given two ounces of chloral hydrate through the stomach tube and cast. Under the handicaps attending such operations asepsis was carried out the best that could be expected.

The operation was performed in the usual manner. It was impossible to ligate the cord, so it was severed and all spouting arteries grasped with hemostatic forceps. The wound was then packed with cotton saturated in 2 percent hot flavine solution.

The packing was removed after 24 hours. The horse was led a short distance to water and on his return hemorrhages started again. He was at once cast and the hemorrhage controlled with Monsel solution and the wound packed as before.

The animal was kept in a stall, water and hay being brought to him. He was given a small feed of oats three times a day. Pulse, respiration and temperature about normal. The packing seemed to cause considerable pain. Since I hated to cast him the third time, I left the packing in 36 hours. On leading the animal from the stall, he was found to be totally blind, pupils greatly dilated and of a dark blue color. There was no inflammation about the eyes, only a slight intraocular tension. The swelling in the region of the wound was not any more than I have seen following uncomplicated castration.

The wound was disinfected three times a day with flavine solution and in three days the swelling was almost gone. A one percent solution of physostigmin was applied to the eyes, thinking that if the pupils were contracted it would perhaps improve the vision, however, the pupils soon dilated again. Belladonna was then tried, followed with physostigmin, but this was of no benefit to the patient. In fact nothing that I have done has effected the blindness in the least degree.

The wound has almost healed, the animal has gained in flesh and appears to be O. K. otherwise.

Have you had any experience with this condition, or do you know of some method that might restore his sight?—B. B., Colorado.

Reply—Your horse is afflicted with amaurosis due to a toxic dose of chloral. During my experiments with chloral as a surgical anesthetic for equine operations, I recall three or more cases analagous to the one you so graphically describe.

It is my opinion that ten drams is the maximum dose of chloral for a horse. Given on an empty stomach in a large single dose, chloral often has a remarkably stunning influence of the cerebrum of a horse. While they withstand far more than ten drams in repeated doses as a calmative in painful colics it is a fact that when these large doses are resorted in animals properly prepared for a surgical ordeal the effect is sometimes harmful.

The cure will depend upon the amount of damage the brain has sustained. My cases so far as I can recall all recovered.

I gave them strychnin and myotic collyria of physostigmin. Dr. Quitman advises potassium iodid in this condition without, however, venturing a prognosis.

# Cattle Practice

*Edited by JOHN FRANCIS DE VINE, D. V. S.*

Professor of Bovine Medicine, New York State Veterinary College at New York University, New York City.

## Urticaria, Nettle Rash, Milk Disease, Nettle Eruption or Pomphus Eruption

WHILE this can in no wise be considered in the realm of puerperal infections, still its frequent occurrence in cattle that are in full milk offers an excuse for briefly mentioning it in this place.

Etiology—There are a variety of conditions and causes mentioned as the direct or exciting cause of this condition in the horse, such as chemical substances following the ingestion of certain foodstuffs, drugs, such as oil of turpentine, carbolic acid, etc., direct skin irritation such as stinging with nettles or the irritation of fly secretions, caterpillars, animals rubbing or scratching, and violent cold winds.

But the two causes most common in the bovine are probably, first, the ingestion of certain foods which by disturbance of the innervation of the vaso-motor skin nerves produces the characteristic swellings and second, and perhaps the more common cause, particularly in purebred and show cattle, is occasioned by excessive distention of the udder from the want of milking when animals are being "bagged" for the show or sales ring.

Those who have had experience in showing dairy cattle are rather familiar with the sudden onset of this ailment. The animal appears quite normal and in the pink of condition, then very suddenly she begins to show more or less uneasiness and evidences of pain from the over-distended udder. There is usually more or less epiphora and if one stands and watches the animal it will be observed that the skin eruptions fairly pop out one after another until in the course of half an hour or even in less time, an animal may have the appearance of having been stung by bees from ears to tail.

When the condition is brought on by what is styled milk poisoning, it is far more rapid in its onset than where it is occasioned by irritating food, such as we sometimes see produced by silage that for some reason may not agree with one or several animals in a herd. In the latter case, there are usually prodromal symptoms associated with more or less digestive disturbances; but in all cases, the character of the swellings are very much the same, and vary in size from that of a pea to an almond. They are hard, half round elevations, flat on top and the hair on them appears dry and ruffled. The swellings are apt to flatten out some before disappearing and sometimes sink in the center, becoming ring like. This flattening out often causes them to coalesce, giving such swellings more the appearance of a skin bruise.

The swellings about the eyes and nostrils may occasion some inconvenience to the animal for a short time. It is not unusual, however, to see cases where the swellings are largely confined to the region of the vagina or rectum and so edematous as to suggest at first the possibility of malignant edema.

Course and Treatment—The course of the disease ordinarily is very brief, and in cases occasioned by over distention of the udder, the animal gets relief almost instantly when sufficient milk has been drawn from the udder to relieve the distension.

The cases occasioned by ingested irritants frequently are of such short duration that the animal has partially or wholly recovered before treatment can be instituted. If, however, the condition continues to linger, laxatives and diuretics are indicated and effective.

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*Brace up, brush up, think up, and you will get up. Think down, look down, act down, and you stay down.—Fantus.*

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*Self pity, sympathy soliciting, wishing and waiting, will only let you down lower.*

# Vacuity of the Rumen

This is a condition which could readily be mistaken for parturient paresis, and I am not entirely satisfied that if the condition were diagnosed as milk fever that we would be making a serious mistake so far as the pathology or the treatment of the two ailments are concerned. Unfortunately when knowledge of this ailment was most sorely needed but little was known in the way of combating it. A quarter of a century ago shippers of dairy cattle in certain local cities suffered severe losses where the cattle were shipped long distances by rail and were denied food or drink while in transit, sometimes for three, four or more days. I have seen as high as 25 percent of a shipment prostrate in a car or become so very quickly after unloading particularly in extremely warm weather. Fortunately this ailment is rarely seen any more, at least this is so in the Eastern Dairy States since the Federal regualtions now require that cattle may no longer remain in cars without being fed and watered for more than 28 hours.

Federal Regulations, Sections 8651-52-53, U. S. Statutes, states that animals may not be confined for a period longer than 28 consecutive hours, without unloading for rest, food and water, for a period of at least five hours, unless the shipper in writing requests that the time be extended to 36 hours.

Symptoms—The symptoms similate in every way parturient apoplexy (milk fever). The history alone aiding in differentiating if there be any difference. The malady occurs in most cases if not all, in the type of animal which is most frequently the victim of milk fever, i. e., in cattle in good condition and those that are styled advanced "springers" or those that perhaps have calved en route or shortly before shipping; such of course are the type of cattle that would naturally be brought to a district, such as this, where extensive dairying is being carried on.

The animals show weakness followed by complete paralysis, swaying of the head, finally resting it on the side or on the ground, just as in the case of parturient apoplexy. The mortality was very high. Ice packs to the head and stimulants internally and hypodermically was about the routine treatment, until udder inflation came in vogue for the treatment of milk fever and was found to be equally applicable and satisfactory for these cases.

The only findings of interest that have been noticed or recorded on postmortem examination are the complete emptiness of the rumen and cerebral anemia. The anemia of the brain and the response of the ailment to udder inflation would tend to strengthen the theory of disturbed cerebral circulation as an important factor in the etiology of parturient apoplexy.

# Enlarged Ovary and Atresia of the Cervix Uteri in Cow

I am writing for a little information concerning a purebred Guernsey cow that aborted at eight months' pregnancy. I was called on the third day to remove the placenta which came away with apparent ease, but suspecting abortion I sent a sample of blood to the Montana State Laboratory. The report was negative.

I was called about a month ago and was told that the cow conceived about three months previously, but not showing with calf. it was decided to have her examined, which I did and found the left ovary about the size of my two fists. I massaged it gently and repeated in three days, again in seven days, then in ten days, with no benefit.

I was out again a month afterwards and found an ovary about the size of my head and much more solid than before and was told that after the last manipulation there was little or no discharge and upon examining the os uteri I found it dilated (it was dilated enough to admit my little finger on my first visit) enough to admit the big finger but upon trying to pass a sound I found the entrance blocked, apparently through the os a good 3 inches from the external entrance of the os uteri.

Could these adhesions be of recent date or are they probably due to rupture during calving?

Would it be dangerous to force an entrance.

and if so, would there be anything gained?

I would appreciate any information you will give.—G. A. C., Montana.

Reply—The adhesions are probably due to infection that accompanied the retained placenta. It would be well to pass your small flexible probe into the cervix to determine if there is really true atresia. My personal opinion is that you will find there is not since you state the cervix is dilated sufficiently to admit your finger, however careful examination with a small sound or probe will settle the matter. If it is absolutely closed, it should be gently dilated, packed with sterile gauze and the cervix douched daily with hot salt solution until the cervicitis is relieved.

If massaging of the ovary does not reduce it, I would suggest that you draw the ovary back against the vaginal wall and puncture it with a small scalpel. This is rather a simple and safe operation. The ovary should then be massaged a few times in the hope of reducing it.

You do not mention the condition of the right ovary, I take it therefore, that it is normal. If so, there is a good chance of your cow breeding after you have relieved the cervicitis.

## OCCURRENCE OF STREPTOCOCCIC MASTITIS.

Dr. W. Beckel (Inaug. Dissertation, 1920).

Streptococcic mastitis is that form of affection of the udder which manifests itself with only a slight inflammatory condition and which in most cases by a gradual diminishing milk secretion results in an atrophy and finally in a complete inactivity of the udder. In most cases only one-quarter is first attacked, then it gradually extends over the entire udder. The great economical losses resulting from this condition are apparent and become even more striking if the great infectivity of this condition is considered. Streptococcic mastitis occurs much more frequently than it is accepted. It may be positively demonstrated by a bacterioscopical examination. Thrommsdorff's leukocytic test can be considered only as an aid for the examination. The quantitative determination of the sediment cannot be utilized for diagnostic purposes. Even Thrommsdorff himself discarded the same. For the production of mass cultures of mastitis streptococci the following media are suitable: 1 percent dextrose agar or bouillon and 1 percent glycerin agar or bouillon.

Streptococcic mastitis induces in the body a sensitiveness towards reactions (Allergia). Such sensitiveness for instance is manifested on the application of an ophthalmic test which streptococcic extracts. The most effective extract for the ophthalmic test is obtained from agar cultures; bouillon culture extracts have not such pronounced action. The application of the eye test on affected animals proved positive in 84.15 percent of cases if the extract was prepared from agar cultures, whereas if the extract was perpared from bouillon cultures only 78.95 percent positive reactions were obtained. In healthy animals both extracts gave positive reactions in 10 percent of the cases.

The possibility of obtaining an ophthalmic reaction in streptococcic mastitis is of scientific interest but for practical application it has not yet been sufficiently developed.—Eichhorn.

## VAGINAL POLYPUS IN COW.

In removing the placenta from a cow recently I encountered something I have never experienced before. Just inside the lips of the vulva there is a growth that hangs pendulant about the length and size of one's little finger and looks very much like a rudimentary teat (but it is perfectly smooth on the surface) with a little depression at the tip of it. What is it? My client desires that it be removed.

Would it be best to ligate or cut it off with an emasculator?—P. L., Colorado.

Reply—From your description it is impossible to say just what the exact nature of the growth is; but cysts, fibrous bands, remnants of the hymen, pedunculated fibrous growths (polypi), etc., are conditions met with rather frequently in the vagina of heifers. Some of which are vestiges of embryonic life where the fusing or changing of the embryonic organs have not gone on in the usual way. As to its removal it is usually safe to accomplish this by means either of a ligature, emasculator or the ecraseur, with the usual antiseptic precautions.

*Don't be like the little, trifling steamboat we used to have puffing about on the Sangamon; with a seven-foot whistle on a five-foot boiler, so that every time it whistled the boat stopped.—Abraham Lincoln.*

# Swine Practice

*Edited by A. T. KINSLEY, M. S., D. V. S.*

## Suggestions on Feeds and Feeding of Swine

The writer has many inquiries from veterinarians in different sections of the country relative to the feeds and feeding of swine. This is a problem that is difficult to discuss in generalities, because of the fact that the foodstuff that may be available on an Illinois farm for feeding of swine cannot be profitably used on a farm in Florida, Montana or Arizona. We believe that all veterinarians will find it profitable to study the problem of feeds and feeding of swine in their respective communities. If veterinarians can intelligently discuss the problem of feeds and feeding with swine raisers and can impart information that will be of monetary value to the man who is producing pork and pork products, he is serving an important purpose in his community.

A food may be defined as any substance which may serve nutrient purposes. The type and amount of foods required depend upon the amount of waste, whether or not the animal is growing or fattening, and the nature and amount of exercise. The primary object of feeding swine is for development and fattening.

Some experiments have been conducted to determine the relationship and importance of nitrogen, phosphorus, ash and other ingredients in growing pigs. Generally speaking, it has been found that from one-half to one pound of protein should be consumed daily per 100 pounds of live weight. The total phosphorus in the body of ten months old pigs is distributed approximately as follows: 4/5 in the skeleton, 1/9 in the meat of the carcasses, 1/20 in the blood and other structures, excepting the fat and there is a trace also in the fat. The amount of phosphorus increases about 50 percent in the skeleton from the time the pig is four or five months of age until it is ten months of age. The amount of phosphorus stored in the body during the growth is approximately one-fourth the total quantity consumed during the same period of time. The total ash in the body of a ten months old pig is distributed as follows: 4/5 in the skeleton, 1/9 in the lean meat; 1/16 in the blood and other organs and the fat. As a pig becomes older the ratio of total ash in lean meat to the total ash in the skeleton decreases.

The quantity of carbohydrates and fats required depends upon the age and purpose of the animal. In addition to protein, carbohydrates and fats, a certain amount of mineral elements is essential. It has been found that mineral matters are of special importance in the development of fattening swine. Calcium phosphate supplies the demands required in the usual developing pig and should be provided. Failure of properly balancing a ration results in malnutrition, dietary disturbances, or other untoward conditions, thus resulting in economic loss to the swine grower or swine feeder. It should be understood that the same pig under different conditions will require distinctly different quantities of the same combinations of feeds, in order that it be properly maintained or developed. The hog can utilize the majority of waste products of a farm more economically than any other animal, but it is equally a fact that swine are not merely scavengers and require some attention.

Diet depends upon the type of animal and its use. Mother's milk is the natural diet for the new-born. Sows, no doubt, differ in the quantity of milk produced, as well as the quality of the same similar to cows. It has been found that some sows produce from five to seven pounds of milk per day for a series of from eight to twelve weeks. The analysis of sow's milk in a limited number of cases has shown that it contains approximately 7 percent of butter fat, 6 percent of casein and albumin, 5 to 6 percent of sugar and 1 percent of ash, or total solids of over 19 percent, thus sow's milk contains approximately 50 percent more total solids than cow's milk. The fat globules of sow's milk are only one-fourth as large as

those of cow's milk. From a few experiments it has been found that some sows rank favorably with good dairy cows in their ability to convert foodstuffs into milk. The size of the fat solubles is an important factor in the digestibility of butterfat or milk. Many orphan pigs that are fed upon cow's milk die of digestive derangement, because of the difference in the digestibility of sow's and cow's milk, due to the difference in size of the fat globules. A prepared milk approximating the composition of sow's milk may be made by the addition of cream, milk, sugar and lime water, and will be found quite useful as an additional food to sow's milk and to replace sow's milk in the case of orphan pigs.

The economical diet for pigs after weaning and until they are to be placed in the fattening pen or used for breeding, will vary according to location. The important factor is to maintain the pigs in a thrifty condition and favor the limit of development in size in a reasonable length of time. Pigs are developed most profitably in practically every section of the United States by pasturing. There are possibly certain exceptions at least according to the agricultural methods now in vogue in restricted areas such as the wheat growing district of Washington and some fruit areas in various states, in which it is claimed that it is more profitable to use the land for other than pasture purpose for swine.

It is more profitable to feed small quantities of corn, barley or other foods to pigs that are on pasture because it favors growth and hastens development. The various types of forage for swine pastures vary in different locations. Alfalfa, clover, blue grass, peas, soy beans, rape and a variety of other grasses and forage are successfully used. The grain or concentrates for swine on pasture should be so selected that the ration supplied is best suited for growth and development. Corn and barley balance the ration for pigs on clover, alfalfa and other legumes. These concentrates can be varied in quantity if tankage and milk products are used. Generally speaking, tankage or some similar food is especially valuable and it will be found that pigs on pasture that have access to tankage rarely root, indicating the tankage is supplying some required ingredient in the food regimen.

According to some investigations, the diet should be slightly different for pigs that are going to be used for breeding and those for fattening, from the time of weaning. The breeding pig should be given about ½ pound of protein or less per hundred pounds live weight, and fattening pigs should be given 3/5 to 4/5 pound of protein per hundred pounds live weight.

For breeding sows a maintenance ration should be provided. Pasturing will be found economical for breeding sows and boars when not in service. Varying quantities of concentrates should be provided, using small amounts of grain until the later stages of pregnancy when the feeds should be changed so that there will be a limited amount of fat building elements and an extra quantity of nitrogenous and milk producing foods. The diet should be diminished a week or ten days prior to farrowing and for two or three days thereafter and the milk producing feeds should be provided in good quantities for a sow cannot produce milk unless she is amply fed. Boars should receive a liberal quantity of concentrates during the breeding season and can be placed on a maintenance ration and preferably on pasture for the remainder of the year.

The economical ration for fattening swine consists of concentrates properly balanced. Many feeders believe that it is profitable to provide a small pasture at least in the beginning of the fattening period. Bulk foods such as may be obtained in pastures is of value in developing swine to stimulate an increase in the capacity of the digestive organs provided an excessive development and the production of the "pot belly" is avoided. Thus green forage as may be obtained in pastures, or the use of corn-cob meal and peanut hulls are of value in fattening swine in the beginning of the feeding period, but are distinctly a disadvantage after the swine are on full feed. Hogs weighing from 175 to 225 pounds usually top the market and are therefore the most profitable market hogs. The heavy hogs, that is, those weighing 300 pounds to 450 pounds, require much more feed in proportion to their weight than 200-pound hogs. It requires approximately 450 pounds of feed when properly balanced to make a 100-pound gain live weight on a pig weighing from 50 to 100 pounds. It is generally estimated that one bushel of corn produces 10 pounds of pork, but one bushel of corn and 150 pounds of milk will produce 16 to 18 pounds of pork. Any feed is a benefit

that will increase the consumption of grain and hasten early maturity, provided the cost of such product is not prohibitive. The quality of pork produced must be of first consideration in the production of pork. Swine grazing on peanut pasture or fed exclusively or largely on peanut meal may make fairly good gains but the pork is undesirable because it is oily and does not firm when the hogs are killed. Excessive quantities of rice bran also produce soft pork. A fair quality of pork has been obtained by feeding swine peanut meal in the beginning and finishing the last thirty days with corn, or using not to exceed 11 percent of peanut meal during the entire feeding period. Rice bran can be successfully fed in the same manner as peanut meal.

Preparation of food stuff is important and is worthy of due consideration by all concerned in the swine industry. The grinding of corn effects a saving sufficiently to pay for more than the grinding. Cooking is of no value for grain foods. It is of value in garbage feeds and it may possibly be profitable to cook such products as potatoes. The soaking of feeds is of little or no economic value. Possibly soaking may in some instances stimulate the appetite, but in more cases the soaking is not properly done and the foods are fermented and soured and thus result in more or less digestive disturbances. The method of feeding is also an important consideration in the production of swine. From various tests that have been conducted in practically all sections of the United States, there is no reason to doubt the efficacy of self-feeders. It should not be construed that self-feeders eliminate the necessity of labor; however, it does diminish the amount of labor necessary in caring for swine. The type of self-feeder selected will depend upon circumstances and upon the personal desire of the feeder.

The feeder that provides the proper ration for developing or fattening of swine has the fundamental principle for success in the swine industry. Veterinarians should be familiar with the feeds and the food requirements of swine. The value of mineral foods has not been recognized by most men interested in the swine industry and some veterinarians have not appreciated the significance of the minerals in the preparation of a ration for swine. The preparation and methods of feeding are individual problems on each farm and the most successful veterinarians are helping the hog raiser to solve those problems.

## RHEUMATISM IN A YOUNG BOAR.

I was recently called to see a valuable Duroc boar with the following symptoms:

Temperature 104 degrees F., respiration slightly increased, pulse accelerated, soft and weak. Upon being forced to rise, he did so with considerable difficulty and outcry. Lameness was marked in the right hind leg, also in the left front leg, but not so much in the latter.

Palpation revealed considerable soreness on the stifle of the affected hind leg, accompanied with some swelling. This animal's appetite was scant at the time and had been so more or less for six months previous.

Six months prior to this time, he had a spirited fight with a stag of possibly superior agility, resulting in a thoroughly warmed Duroc boar, however, not overdone. From then on this boar began losing his appetite, but still did well as far as growth was concerned.

This was the first time I had seen this boar and I pronounced it articular rheumatism, advised a saline cathartic (8 ounces sulphate of soda) and to be followed by an anti-rheumatic (Salicylic acid 30 grains at a dose) in feed or drench as considered best, morning and evening. This boar weights nearly 400 pounds.

Was my diagnosis correct and can I expect recovery from my treatment?—S. K., Illinois.

Reply—If this is a young animal, I would suspect rachitis or some disturbance due to deficiency. If he is mature, there is a possibility of osteomalacia, but the history you have given combined with the symptoms, are more typical of rheumatism, as you have suggested. Rheumatic disturbances are usually more or less shifting which is a valuable point in differential diagnosis.

The line of treatment you have prescribed is splendid, providing the salicylic acid administration is not continued over a long period of time. It is well known that this drug will interfere with the appetite and, therefore, great care should be exercised in prescribing, particularly a long course of treatment. I suggest that combined with this line of treatment some preparation containing vitamines, if he is not already receiving such in his foods, be provided and in addition some good mineral tonic.

# Live Stock Poisoning

*Edited by L. H. PAMMEL, Ph. D.*

Professor of Botany, Iowa State College, Ames, Ia.

## Is Common Sorrel (Rumex Acetosa) Poisonous?

Every now and then records of poisoning from rhubarb and sheep sorrel appear in the medical press and daily papers. The writer reviewed a case of poisoning reported by J. Webster from rhubarb in VETERINARY MEDICINE —13:456—somewhat earlier a note was published by me in the same journal—13:300—calling attention to a paper by Dr. Bruce of British Columbia, in which he refers to the theory of Dr. H. Adwen that Rumex, to which sheep sorrel and dock belong, is responsible for hermaturia in cattle. Cornevin in his treatise on poisonous plants makes the statement that the sheep sorrel may set up serious symptoms in the horse and in some cases even cause death. Müller, a German author, points out that sheep have been poisoned by the same plant. In my Manual of Poisonous Plants it is referred to as poisonous, and Long, an Englishman, in his treatise "Plants Poisonous to Livestock" mentions dock (Rumex) as plants which may be injurious, and makes a record of the poisoning from sheep sorrel to children, horses and sheep. "Some sheep were dying."

It is interesting to note that three species of dock (Rumex crispus, R. altissimus, R. obtusifolius) are common throughout northern United States, especially east of the Rocky Mountains and several others are common in the Rocky Mountain region. The eastern species is common in pastures and so far as I have observed cattle, sheep and horses do not eat the weeds. There are two other species of Rumex more or less common like the sheep sorrel (Rumex acetosella). Patience dock (Rumex patientia) in marshy places. The common sorrel (Rumex acetosa) is commonly found eastward and in Europe. Recently I observed a great deal of this plant in Alabama, but I heard of no cases of poisoning from the plant. The patience dock and common sorrel have long been used like pie plant. I do not recall cases of poisoning from these plants. The sheep sorrel is an extremely common weed on acid gravely and sandy soils in the north, Michigan, Wisconsin and Illinois, where the fields are fairly yellow when the plant is in bloom (May 27, 1921). Apparently cattle, sheep and horses in some pastures avoid the plant.

I have before me an interesting article by Dr. J. F. Craig of Ireland on the poisonous nature of common sorrel—The Journal of Comparative Pathology and Therapeutics, 34: 27, 1 f., 1921—(Rumex acetosa) in which it is shown that this plant has .1575 per cent oxalic acid and it occurs in the form of binoxalate potash. The author conducted six experiments with four young cattle about seven months old, two heifers, two bullocks which were fed with the fresh sheep sorrel. Some refused to eat it, or ate it only sparingly. One bull ate 237 pounds of sorrel from the 29th of April to the 29th of May. At no time did the bull show any injurious effects. Though suspected of being poisonous in pastures near Dublin, the author says it is unlikely that they would have picked up the quantity fed to one of the animals. The experiments do not support the view that the common sorrel is poisonous. "It is possible, of course, that the amount of oxalates or other toxic substances present in the common sorrel may vary in different years and that such variation might affect the result of experiments."

### WILD CHOKE CHERRY LEAVES.

Dr. C. A. Kehr, of Hopewell Junction, New York, sends a specimen of choke cherries with some insects and letter as follows:

"I am sending sample of choke cherry which appear to be infested with a minute louse causing the leaves to die. Would this cause poisoning of calves if eaten.

"History—Three calves were turned into small enclosure, and end of which had a great number of choke cherry bushes about two or

three feet high. Four or five days later one of the employees on the farm observed that the calves were not as thrifty and a week from the time the calves had been in the lot two showed acute toxic symptoms, rapid respiration, staggering gait, chafing jaws, grinding teeth together, cold surface of body to touch and temperature elevation. Indications were of hydrocyanic acid poisoning and treatment administered accordingly."

The insects are not primarily responsible for the trouble. The choke cherry and other cherries contain a poisonous glucoside Amygdalin, which, through an enzyme or ferment, is converted into hydrocyanic acid. There is more of this poisonous hydrocyanic acid when leaves are in a wilted condition than when green. The diagnosis, it seems to me, is correct and that this poisoning came from the wilted choke cherry leaves.

## BLACK MEDICK.

Dr. C. M. Heth, of Lone Rock, Wisconsin, sends the following letter and specimen. "Enclosed find sample of a weed that grows in a pasture near here. It grows much like alfalfa and the cattle eat it readily. Let me know what it is if possible. This pasture is cut over land and has never been cultivated."

The specimen sent is black medick (Medicago lupulint), a well known legume, highly prized as a forage plant, in California and Alabama, and other southern states. It is closely related to alfalfa.

## DERMATITIS IN A HORSE FOLLOWING A PARASITIC INVASION.

I am sending you in a closed vial some skin scrapings taken from a horse, which I wish to have examined and the case diagnosed and treatment prescribed. This case has baffled me for months.

This horse has been affected for about eighteen months. When I was called to see him the hair was off in patches over the head, neck, front legs and around the base of the tail and caused considerable itching.

I treated it with sodium cacodylate, giving three injections of 45 grains ten days apart and applied pehnol tar ointment locally. I was successful in effecting a cure for about four months. It has broken out again and I have been unable to check it.—H. L. R., Ohio.

Reply—The specimen consisted of scaly, degenerated skin tissue, but no parasites could be found. The treatment given is probably sufficient to kill all ordinary parasites. The examination I made was very thorough, so that I can only conclude one of two things, either your treatment has killed all of the parasites or your sample was not a representative specimen. However, I think the first is the case and you are now probably dealing with a simple dermatitis which is the result of the parasitic invasion and the past treatment. We would suggest a lanolin-sulphur ointment be used. Don't overlook thorough disinfection of entire premises, including harness, brushes, blankets, etc.—C. A. Zell.

## TUBERCULOSIS AMONG FOWL.

I am sending, for bacteriological examination, the lungs, heart and liver taken from a two-year-old hen. Several birds in this flock will begin to go lame and gradually lose flesh and in about two months become much emaciated and die.

This has been going on for the past two or three years. On autopsy, the intestines and gizzard and gall bladder all seemed to be normal, but the organs I am sending are not. There is very little blood in the carcasses. Kindly give me your diagnosis of the case.—W. L. S., Michigan.

Reply—Bacteriological examination of this specimen showed many tubercle bacilli present. You undoubtedly have to deal with tuberculosis in these chickens. We suggest an immediate tuberculin test for the remainder of the flock. If the disease is to any extent widespread in this flock, no attempt should be made to save any part of it, but all fowl on the premises should be killed, the premises given a proper disinfection and stocked with new birds.—C. A. Zell.

## FORAGE POISONING.

I am sending you some corn silage that I think is the cause of forage poisoning. Please examine and report finding.—G. F. Y., Minnesota.

Reply—Bacteriological examination and cultural examination of the specimen of corn did not reveal any pathogenic organisms. This, however, does not exclude the possibility of botulism, since it is possible for the specimen to have been taken from a portion of the feed in which the B. botulinus did not occur.—C. A. Zell.

# Laboratory Diagnosis

*Edited by C. A. ZELL, D. V. M.*

## Clinical Findings Indicate Caseous Lymphadenitis

I am mailing you, under separate cover, pieces of lung, liver, spleen and kidney for microscopical examination.

This tissue was taken from an adult sheep (ewe) which I had occasion to autopsy. The animal had been in rather poor condition for some time.

Postmortem findings. Head, cervical lymph glands enlarged with calcareous deposits affecting principally the medulla but running out to the periphery.

Thoracic cavity—Lungs normal with exception of surface and substance being covered and filled with numberless small lardaceous nodules resembling parasitic nodules.

Bronchial and mediastinal lymph glands were slightly enlarged by calcareous deposits.

Heart normal in appearance. Visceral and parietal pleura normal.

Abdominal cavity—visceral and adbominal peritoneum dull and thickened with tufts of fibrin.

Liver—Normal. Portal lymph glands contained several calcareous specks.

Spleen—Many times larger than normal, capsule greatly thickened. Contained many calcareous nodules (raised) from size of millet seed to size of a silver dollar. These nodules seemed to have their beginning at the center and radiating out to the periphery. Spleen substance had the look of a true leukemic spleen. Splenic lymph glands contained calcareous deposits.

Mesenteric lymph glands contained calcareous deposits.

Stomach, normal; kidneys, capsule thickened, cloudy and swelling; bone, normal; body glands (all) contained calcareous specks and material.

I diavnosed this as a case of leukemia. Will you kindly substantiate this or tell me what the condition is?—R. B. P. W., Minnesota.

Reply—These specimens reached the laboratory absolutely dried out and no examination was possible. We urge that you send specimens from another animal wrapped in a cloth moistened in a two to four per cent solution of formalin, instead of packing in borax. The history and symptoms strongly indicate that you have to deal with caseous lymphadenitis.

This ailment is prone to run an epizootic course.

**DIRECTIONS FOR PACKING SPECIMENS FOR LABORATORY EXAMINATION**

1. Gross anatomical lesions, where a bacteriological examination is desired, are best sent carefully wrapped in a cloth wet in a 2 to 10 percent solution of formalin, and properly boxed. For small specimens use the weaker solution. For large specimens, the stronger solution.

2. Chickens and other fowl should have the feathers removed, be wrapped in a cloth saturated with 10 percent formalin solution and sent to the laboratory whole and unopened.

3. Specimens of tumors or other tissue, not for bacteriological examination, may be sent in a 4 percent formalin solution.

4. Specimens of blood, pus and body fluids for bacteriological examination or for serum tests should be drawn aseptically and sent in sterile containers (small bottles boiled and cooled), airtight. Such specimens should reach the laboratory quickly. If sent by parcel post they should be sent special delivery. It is best to send blood, pus and body fluids by first class mail, special delivery. If the quantity of pus is small, dilute it with sterile normal salt solution to prevent drying. Sterile containers will be supplied on request.

Quantitative chemical analyses cannot be furnished free of charge owing to the large amount of work often involved, but tests for the presence of the more common poisons will be made without charge.

Where an immediate reply either by wire or letter is requested, a nominal charge will be made. In such cases, the inquirer will be billed direct by the laboratory.

In all cases where laboratory examination is requested the history and symptoms of the case as fully as they may be obtained, and a description of the postmortem findings if an autopsy has been made must accompany the request, the object being not only to enable the laboratory technician to render the greatest service possible, but also to make the report of value to readers who have not seen the case.

Send all correspondence and specimens to Veterinary Medicine, 53 W. Jackson Blvd., Chicago, Ill.

### Drying of Specimen Renders Findings Unsatisfactory.

I was called to a ranch to hold a postmortem examination on a cow that had died the preceding afternoon. The owner stated she had been

coughing for several days and had also been off feed and losing flesh.

The day she died she was badly bloated and the hired man had stuck his knife into her rumen.

Autopsy showed no anatomical changes in abdominal cavity, but a portion of the left lung was very dark. I told the owner I thought the bloating had caused death. He then showed me two other cows which exhibited the same symptoms as the one that died, except the bloating. One of them had been coughing and discharging a little saliva since about March 6, and both cows were losing flesh every day.

The temperature and respiration were about normal, but when made to move about they would cough distressingly and sway as though they were very weak.

At this time he has ten or twelve cows in the same condition. This morning I went out to autopsy two of the first ones that were taken sick, which was about six weeks ago. Autopsy showed no change except the lungs are very dark or at least a portion of them were. I am sending a piece of lung tissue for examination. Please examine this specimen and let me know your findings. I suspect hemorrhagic septicemia, but the symptoms were very misleading.—C. L. I., Texas.

Reply—Examination of this specimen was somewhat handicapped because it was much dried out from the borax packing. In sending specimens such a long distance, it is better to wrap them in cloth moistened with a weak solution of formalin.

No bipolar organisms of hemorrhagic septicemia were found, but a few streptococci and diplococci were present.

## GLANDULAR HYPERTROPHY FOLLOWING ORCHITIS.

I am sending you by parcel post a specimen for laboratory examination.

This specimen is a testicle taken from a 2-year-old colt. On a physical examination both testicles appeared normal in every way. When I came to remove the right testicle, on cutting through the skin coverings into the testicle itself the coverings did not roll away from the gland as they should, but adhered very closely. On cutting into it the testicle appeared of a dark brown color, but normal in size.

The adherent coverings were broken down with thumb and finger and the testicle removed in the usual manner by the use of an emasculator.

The left testicle was normal in every way. As this is different from anything I have observed before and being unable to account for it, I am sending the right testicle for examination. I made a tentative diagnosis that the trouble was of traumatic origin. The history of the case is that so far as known this colt has always been all right in every way. About one year ago, he was kicked severely on the right flank by another horse. This specimen is in a four percent solution of formalin.—C. M. M., Maine.

Reply—The specimen sent showed no evidence of malignancy, but only cystic, glandular hypertrophy with masses of dense fibrous tissues, a condition that often follows acute inflammation of the gland, such as might occur from a traumatism from a local infection or as a sequel to colt distemper.

## ARSENICAL POISONING IN SHEEP.

I am sending you by express a specimen of sheep's stomach for examination. All sheep in this flock were apparently well in the evening, but one buck, one large lamb and two ewes were found dead near a pool of water the next morning.

Postmortem findings on two of them were about the same. All the viscera seemed normal except the stomach which showed areas of inflammation with slipping of mucus or internal coats. The pasture they were on was short blue grass with many blackberry briars in it. There has been no previous trouble with these sheep nor among neighboring flocks.—A. C. K., Kentucky.

*Reply:* Chemical analysis of the specimen sent revealed arsenic in quantities sufficient to account for the death. Kindly let us know what you can find out as to how they got the arsenic.

## THE USE OF FORMALIN PRECLUDES BACTERIOLOGIC EXAMINATION

Under separate cover I am shipping you a section or small intestines taken from a four-year-old cow.

This cow did not defecate for seven days, in spite of the usual treatment.

On autopsy the entire small intestines were found to be covered with small nodules. No

ther abnormal condition was found.—E. A. D., South Dakota.

*Reply:* Gross anatomically the specimen appears to be of a case of "enteritis pseudotuberculosa bovis," but the organisms could not be located since the specimen was sent in a too strong formalin solution which undoubtedly killed all organisms present. All cultivation experiments failed to demonstrate the true cause of the trouble.

We would suggest that you send in some more specimens if available, but using only a weak disinfecting solution.

## SEROLOGICAL TESTS FOR INFECTIOUS ABORTION ARE ESSENTIALLY HERD TESTS.

I am sending you a blood specimen from a cow, for diagnosis. Infectious abortion is supected.—R. W. A., Ohio.

Reply—The complement fixation test for contagious abortion gave a positive reaction

However, we call your attention to the fact that the serological tests for contagious abortion on a single animal in the herd are of little value. Blood from each animal in the herd should be supplied. Please observe the rule that requires that the history and symptoms of the case be given in each instance where laboratory examination is required. Give sufficient information to make the report of value to others beside yourself and to enable the laboratory to give you intelligent assistance.

## HISTORY AND SYMPTOMS INDICATE JOHNE'S DISEASE.

I am sending to you by special delivery a sample of feces taken from the rectum of an adult cow which I believe has Johne's disease.

I was called to see this cow about ten days ago and the owner informed me at that time that she had been dull and stiff for the last two weeks. On examination I found the following symptoms: General appearance of weakness; stiffness and disinclination to move. The coat was dull and the hair erect; the eyes sunken; the feces thin, watery and discharged with some straining and gas bubbles present in them. The temperature was 103.2 deg. F.; the pulse somewhat weak and quickened and the mucous membranes anemic. I saw the animal again yesterday and found her undergoing progressive emaciation and anemia. The appetite was capricious and lactation had ceased.

Treatment: Intestinal antiseptics and astringents have been given but to no avail. Strict hygiene has also been followed out without benefit.

This man lost an animal several weeks ago that was noticed to have diarrhea for a few days before dying, but I did not see that animal.—C. H. O., Illinois.

Reply—A careful examination of the specimen of feces revealed no acid fast bacilli such as are commonly found in Johne's disease. This negative finding is by no means conclusive, however. Specimens for examination from Johne's disease should be scrappings from the mucous membrane of the colon, as far forward as you can reach. Please send us another specimen collected in this way.

## PROBABLY INFECTIOUS ABORTION.

I am sending a portion of placental membrane from a purebred short horn cow that aborted at eight months. There have been abortions of other cows in this herd within the last few months. All these cows dropped live calves a year ago.

There are about one hundred purebred short horn cattle in this herd. Please report as soon as possible.—A. B. R., Indiana.

*Reply:* No B abortus was found in the specmen sent us, but the history is such as to strongly indicate infectious abortion. We urge you to send blood specimens from all animals in the herd for seriological examination.

Please observe the regualtion calling for the history and symptoms where laboratory examination is asked.

## UNWHOLESOME MILK FOLLOWING METRITIS.

I am sending a sample of milk from a cow that has recovered from endometritis. The owner is anxious to know if this milk is suitable for human food.

This sample is from the same cow that the speciment was from that I send you a month or so ago. Thanks for your excellent service. —H. W. U., Pennsylvania.

*Reply:* Bacteriological examination of milk showed quite a number of streptococci and diplococci present. It is not advisable to recommend this milk for human use while these organisms are present in the numbers in which they are now found.

# Parasitology

*Edited by MAURICE C. HALL, Ph.D., D.V.M.*

## Collecting and Examining Parasites

The collection of parasites calls for certain personal equipment and a limited amount of apparatus. Some collectors have a highly developed personal equipment. It consists in: 1, an intense and persistent interest in parasites; 2, a tremendous curiosity on the subject, which leads one to scrutinize every suspicious object as a possible parasite; 3, an equal amount of pertinacity, which impels the investiagtion of these objects until they are definitely proven parasitic or non-parasitic and not merely probably one thing or another; 4, a faith and conviction that there are parasites present; and 5, a thoroughness which lets no parasite escape. To collect parasites one should be in the mood to collect parasites. Given this, one needs only keen eyesight, a small amount of apparatus and a system for examination of the host animal.

As regards a system for examining animals for parasites, one must know where to look. So far as time and other circumstances permit, look everywhere. Examine all pathological conditions as possibly of parasitic nature. Examine all cavities, large and small. Assume that the digestive tract always has parasites; that the respiratory tract usually has parasites; that the excretory and circulatory system sometimes harbors parasites, and that the skeletal, muscular, nervous and reproductive system may harbor parasites at times.

In examining an animal for parasites, the usual postmortem examination instruments, knives, scalpels, forceps, etc., are necessary. In addition an enterotome is essential; it is the one instrument which the parasitologist finds indispensable. The intestine is such an important site of infestation for parasites that the enterotome scissors with the guarded point save a large aggregate amount of time over ordinary scissors or a knife in opening intestines. Too many routine postmortem examinations fail to take into consideration the lumen and inner lining of the stomach and intestines. The condition of the mucosa and the presence or absence of parasites are guessed at from a superficial observation of the serous coat. This method affords inferior evidence as to conditions present and the parasitologist cannot use such a method in examining animals for parasites. It is true that ascarids and other worms may at times be detected in this manner, but it is also true that large numbers of worms cannot be detected in this manner. For all-around use, an enterotome should have long, comparatively narrow blades with a guard of moderate size on one blade. Such an enterotome can be used on anything from the size of a chicken to that of a horse.

A few tall jars, some glass dishes and an ample supply of running water are a great aid in collecting certain kinds of parasites. Rubber gloves may be used if desired; they afford protection from infection and also from undesirable odors on the hands. In the postmortem examination of the dog, cat, swine or animals of similar size, it is advisable to put the stomach into one jar of water, or, better, physiological saline solution, the small intestine into another jar, the cecum into another and the colon and rectum into another. Slit each of these organs, wash the contents into the jar, scraping off adherent material with the fingers or back of the enterotome, examine the organ, especially its mucosa, and then discard it. After the contents of the jar have sedimented, decant the supernatant fluid down to the mass of intestinal contents at the bottom of the jar, getting rid of the soluble coloring matter and the floating flocculent matter. Worms will remain in the heavier ingesta at the bottom. Add fresh water or saline and again decant, repeating this process until the supernatant fluid over the intestinal contents is clear. It is advisable to let the fresh water trickle down the sides of the jar in order not to form bubbles which may carry parasites to the surface. In fact all matter flowing out of the jar in the process of decanting should be scrutinized for possible parasites sustained by air bubbles, straw, etc.

When the supernatant fluid is clear, the ma-

terial in the jar should be agitated in order to stir up the intestinal contents and a small amount of this material should be poured into a glass dish and examined over a dark background, the dish itself being in a good light. The best background is that afforded by a shadowy floor when the dish is held at the level of the laboratory table. Parasites are visible as distinct objects of definite outline, frequently white or yellowish, though sometimes red or motley colored, and usually actively motile. They may be picked out with a dissecting needle, forceps, or, if very small, with a pipette. Where such objects appear, but are not definitely recognizable, the use of a small hand lens, with a magnification of 6 to 12 diameters will usually aid in determining their nature. Failing this one must resort to the use of the dissecting microscope, binocular or ordinary compound microscope.

With such large animals as horses, cattle and sheep, it is seldom necessary or feasible to wash and decant the stomach contents. The stomach of the horse may be slit and the gastric mucosa carefully examined after the contents have been rolled out in such a way as to keep them together as much as possible. An examination of the exterior of this mass of contents, the part which has been in contact with the stomach wall, will usually show many more parasites than the interior of the mass, or the part which occupied the natural portion of the gastric lumen. The rumen, recticulum and omasum may be slit and examined in a similar manner in the case of ruminants, but the fourth stomach or abomasum should be washed and decanted. Parasites are occasionally present in the first three stomachs. They are almost always present in the fourth stomach.

The small intestine of the horse is rarely washed and examined for parasites and the large intestine cannot be satisfactorily handled in this manner. In the latter, the examination of the intestinal wall and of the contents in contact with the wall will indicate quite well the nature of the parasites present, and where it is desired to obtain all the parasites present, so far as possible, as is the case in testing anthelmintics, the contents may be rolled into balls, squeezed to remove the excess of water, and carefully picked apart by hand.

It is, of course, unnecessary to wash and decant in the case of the esophagus, since this organ is devoid of a constant content. The esophagus may be examined by stretching it between the hands and holding it up to the light in order to detect such worms as the gullet worm, this latter occurring in horses, cattle, sheep and swine. It may be detected under the mucosa of the tongue and pharynx, also, in some cases.

The examination of the lungs for parasites may call for the use of both the enterotome and the knife. Cysts, such as those of the lung fluke, Paragonimus, may be sought for and investigated with the aid of the knife, but the nematodes known as lungworms, much commoner parasites, are best sought for with the aid of an enterotome. The enterotome facilitates slitting the trachea, bronchi and smaller air tubes and these should be slit as far as possible, especially where the pulmonary pleura shows any evidence of inflammation, as the worms are frequently present only in the smaller tubes when present in small numbers. Occasionally even the trained pathologist will neglect the opening of the smaller air tubes and will search in vain for evidence of tuberculosis or other bacterial disease to account for symptoms and lesions due to worms which only needed to be looked for to be found. Some of the smallest lungworms, such as some species from sheep, are difficult to detect and it may facilitate the search for these to put portions of the lung showing inflammation into water and look closely for worms floating out from the tissue. Sometimes microscopic examination of stained slides is necessary to demonstrate the small lungworms present. Numerous petechiae suggest the presence of larval ascarids or other worms; these petechial areas may be examined in press preparations under the microscope to determine the presence or absence of these worms. The use of two metal frames, connected by screws for pressing two heavy glass slides together facilitates the examination of such specimens, but lacking such apparatus two ordinary glass slides may be utilized and held together by rubber bands if desired. All lesions that could possibly be parasitic, and there is a wide range of such lesions, should be examined for parasites.

The excretory system may harbor such parasites as kidney worms in swine and the giant kidney worm in dogs. Larval worms may also occur in the kidneys, but these can only be detected or suspected on the evidence of lesions produced by them.

In the circulatory system parasites may be expected in the interior mesenteric artery of horses in the large majority of cases (Strongylus vulgaris in verminous aneurisms) and in the right

heart and pulmonary artery of many dogs in parts of the southern United States. A number of parasitic worms use the blood stream as a distributing current during part of their life history and the blood may be examined for such forms by laking with three percent glacial acetic acid and centrifuging, the sediment being examined microscopically for worms.

Parasites in the skeletal, muscular, nervous and reproductive systems are not very common, but such parasites as hydatids in bones trichinae in swine musculature the gid bladderworm in the brain of sheep, and flukes and roundworms in the oviduct of chickens warrant us in remembering the possibility of such occurrences and in investigating wherever symptoms or lesions suggest the advisability of so doing.

The parasites collected should be washed in physiological saline solution to remove mucus and other adherent material, otherwise this material will interfere with proper fixation and frequently appear on mounted material at points where it obscures important anatomical details. After washing, nematodes should be transferred, whenever possible, to hot 70 percent alcohol, in which they usually straighten out in a satisfactory position for subsequent examination. Tapeworms and flukes are killed in a very satisfactory manner in equal parts of 70 percent alcohol and a saturated aqueous solution of corrosive sublimate, to which is added one percent glacial acetic acid. This may be used cold or, better, at a temperature of 70 to 80° C. (158°-176° F.). Allow this mixture to act for 10 to 20 minutes. Subsequently these worms should be washed and then put in a tincture of iodin to remove the excess of corrosive sublimate. For collecting specimens in the field or wherever there are no laboratory facilities, a weak formalin solution, one to two percent, is fairly satisfactory.

Nematodes may be examined in physiological saline while yet alive or cleared for study by transfer from 70 percent alcohol to the same strength of alcohol containing 5 to 10 percent glycerin. This mixture and the contained worms may then be placed in an incubator or paraffine oven and kept there until the evaporation of the alcohol leaves the specimens in glycerin. By this time the specimen is usually quite clear and the transfer to glycerin is sufficiently slow to prevent the distortion of the specimens by osmosis. The worms may then be permanently mounted in glycerin or glycerin jelly. Some nematodes, especially small ones, may be transferred to glycerin jelly directly from 70 percent alcohol without sufficient distortion to make an ordinary identification at all difficult, but large worms are usually much distorted by such a transfer. Another clearing agent consists of 20 parts of absolute alcohol and 80 parts carbolic acid. Nematodes are rarely stained for examination by most workers, as they are not amenable to most stains, but gentian violet is fairly penetrating and may be used to bring out many interesting details of structure. Haematoxylin is also used at times and gives a good picture. Occasionally nematodes are dehydrated, cleared and mounted in balsam, but this often makes them too transparent for some purposes and simpler and quicker methods are usually quite as satisfactory or more satisfactory.

Tapeworms and flukes are usually stained, dehydrated, cleared and mounted in balsam for study and identification. The scolices or heads may be mounted in glycerin, glycerin jelly or similar media for the examination of the hooks, and gravid segments are sometimes similarly mounted for the purpose of examining the eggs.

Probably there is no field in which the veterinarian can find more new scientific facts with more ease than in the field of parasitology. A number of interesting parasites of the domesticated animals were originally described from the United States and some of the records of rare parasites are from this country. Undoubtedly there are other undescribed parasites and unrecorded occurrences of rare parasites which would be brought to light if more veterinarians took an active interest in the subject of parasitology. It should be an especially interesting field to the young man who still has the energy to expend on postmortem examinations and who has not yet grown rusty in regard to what he learned of parasitology in college.

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In the church quackery is rampant. In Parliament there are more quacks than there are politicians duly qualified by learning of political history, geography or economics.

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The cause of quackery is due to the faulty education of the masses on medieval lines. This is evidenced by the widespread belief, even by so-called highly educated persons, in mysticism, spiritualism, Christian science, etc. The majority love the charm of mystery, the unprovable, etc. Truth or science seems a bore to them.—Veterinary News.

# Queries and Answers

*Edited by E. L. QUITMAN, D. V. S.*

## Carbon Tetrachlorid as Swine Anthelmintic

I am trying to get around the necessity of administering such a large dose of castor oil as two to four ounces to swine. When one has hundreds of swine to dose it becomes a task to administer such a large-sized dose to each animal. What do you think of increasing the laxative action of the oil by dissolving a little croton oil, aloin or other laxative in it?

I noticed in an article by Doctor Hall entitled "Carbon Tetrachlorid for Hookworm in Dogs" the statement "Incidentally it (carbon tetrachlorid) is only a little less effective than chenopodium in removing ascarids." I am going to try carbon tetrachlorid against the round-worms of swine. I should like to receive any information or suggestions that you might have in connection with the use of this substance for this purpose. Do you think that it could be successfully given in the same way as oil of chenopodium, that is, dissolved in castor oil, and that it would be effective against the round-worms of swine?—W. A. K., Illinois.

*Reply by Dr. Maurice C. Hall*: With reference to your suggestion that the action of the castor oil administered after oil of chenopodium to remove worms from swine be enhanced by the addition of croton oil, aloin or some similar substance, it appears quite probable that something of the sort could be done, though it would be advisable to ascertain experimentally what substances are most satisfactory. However, the work of finding a suitable purgative is something that can be done handily by the practitioner, since a drug that gave good purgation, a low death rate in connection with anthelmintic treatment and no evident bad effects would evidently be indicated in comparison with drugs giving inferior results. Of the drugs you mention, croton oil should be avoided. This drug is rightly called drastic, and after seeing the postmorten appearance of the digestive tract following its use, one is apt to lose any previous inclination to use this drug. Wright has recently reported in an article on horse parasites that he finds aloes as satisfactory as linseed oil as a purgative following oil of chenopodium, and this finding would warrant a test of aloin as a purgative for swine. Calomel might be satisfactory.

With reference to the use of carbon tetrachlorid for removing round-worms from swine, it is necessary to make only conservative statements at the present time, as anthelmintic theory often meets serious rebuffs from anthelmintic practice as one stretches the theory to cover a different host or a different parasite. The success of carbon tetrachlorid against ascarids in dogs suggests that it would be effective against ascarids in swine; it will require actual test to determine whether it really is effective. It might prove effective against other worms in swine. Judging only from the experiments on dogs, where a dose equivalent to 3 cc. for an average-sized (22-pound) dog was found effective, swine weighing about 100 pounds might be given 6 cc. of carbon tetrachlorid as a trial dose. In view of the danger from administering capsules to swine, owing to the possibility of lodging them in the phrayngeal racess, and of the danger of giving a toxic volatile drug, undiluted, as a drench, the method of administration which you suggest, giving the carbon tetrachlorid dissolved in castor oil, would be the logical one to test. Unforseen complications might develop in this connection and the method might prove unsatisfactory.

In a general way, it is unsafe to prophesy results from anthelmintics whenever a single factor in an established equation is changed. When an effective action is experimentally established for a given anthelmintic in a given dose against a certain parasite in a certain host, one may conclude on the basis of analogies or relationships that a substitute may be made in the case of the drug, the parasite or the host, but in many cases experimental tests will not support these theoretical conclusions.

As a general thing it is to the advantage of the practitioner to await the findings of the experimenter and investigator. In this way the

expense is borne by funds intended for such purposes, the deaths of animals from too large doses and other causes add to our knowledge of the safety factors without prejudice to the investigator, and the necessary time and equipment for careful and thorough experiment is at the disposal of the laboratory man. On the other hand, the practitioner can rarely afford the costs of experiment, his reputation is intimately connected with the deaths in his practice, so much so that he is usually chary about using any drug or method that is not well tested in advance, and he seldom can spare the time for the detailed examination necessary to determine accurately the results obtained from anthelmintics. Definite conclusions require definite data and veterinary practice allows little time or opportunity to obtain such data.

As long as carbon tethachlorid gives any promise of usefulness it will be definitely in line for test against the various parasites of the important domesticated animals and man. Meanwhile, if investigators are too few to keep ahead of the demand for information there is no reason why the practitioner who wishes to do so should not make his own tests. What he learns, especially in regard to doses and mode of administering the drug and in regard to the safety of the drug will be welcomed by the investigator. If you try out carbon tetrachlorid on swine, you should publish your results.

## EPILEPTIC CONVULSIONS AND WORMS IN DOG.

I have a patient, a black Pommeranian dog, age 20 months, that has been suffering with fits since he was about six months old. He was treated by another veterinarian, but what he was given I cannot say. About three months ago I was called in to see him, and I put it down to be worms (tape). The dog would vomit and would have ten to twenty fits per day or so, and would then appear alright for probably one or two weeks, after which the same thing would occur again. As soon as a stranger would go into the house he would commence going around the room in a circle, sometimes blind and always going the same direction. This would keep up until he was quite exhausted.

I gave him potash bromidi five grains three times daily for three days at a time, also gave him a tonic as he appeared very much run down. He seemed to get a little better so I gave him the following:

℞ Olei Terebinth. ..... M xxx
Olei Aspidii ..... ℥ j
Emul. Chloroformi ..... ℥ ij
Syrupi q. s. ad. ..... ℥ ss
M. Sig.—Give at one dose.

When this had been given he slept for some time and then appeared very sick and vomited. He however passed quite a lot of worms (tape included). Still the fits continued.

Two weeks after the above treatment I gave him ¾ gr. sodium cacodylate subcutaneously and repeated the same dose in three days. Since then he has had only a few fits and they have been slight. I gave him another dose of the taeniacide but without benefit.

His urine when I first visited him was very thick and when he would pass it on the oil-cloth or the floor it would stick.

Do you think I am right in my diagnosis and have you any suggestions to make.—E. E. St. G. P., Canada.

Reply—Your patient is a true epileptic, and it is my belief that his infestation with worms is a coincidental and aggravating complication, but it is hardly possible that the worms are the sole cause of his having these repeated convulsions. You should repeat the anthelmintic for tape worm. In addition to this, but not at the same time, give 2.5 minims per pound weight of carbon tetrachlorid. This latter drug is to be given in gelatin capsules, the No. 00 size, being convenient for this purpose. This drug is not to be preceded, accompanied with nor followed by a purgative; it is especially valuable to remove all types of round worms, especially the hook worm, and should be chemically pure.

For the epileptic condition give the following prescription:

℞ Sodii bromidi.....
Sodii boratis aa..... ℥ jss
Syr. zingiberis ..... ℥ ss
Aquae q. s. ad. ..... ℥ ij
M. ft. sol.

Sig.—One teaspoonful three times daily, which may be continued for two or three months. A liberal meat diet in conjunction with oatmeal and unpolished rice should be given. Should he refuse to eat the oatmeal and rice when thoroughly mixed with meat gravy or meat broth and meat, then give him a preparation known as "metagen," a vitamine preparation put up by Parke, Davis & Co.—

## CARBON DISULPHID AND OIL OF CHENOPODIUM FOR HORSE.

I have read with interest and profit the articles written by Dr. Maurice C. Hall on parasitology, and would like to ask Dr. Hall if it would be safe to administer to a horse carbon disulphid and oil of chenopodium in separate capsules, this, of course, done after fasting 24 hours and followed by a purge. Would there be any ill effects from the use of these two drugs at once? If the treatment for that we would have a very reliable and efficient way of ridding the horse of all worms. Will you please advise if any experimental work has been done along this line?—A. L. S., New York.

Reply—It would probably be inadvisable to administer carbon bisulphid and oil of chenopodium simultaneously to horses. Both drugs are toxic and irritant and even when used alone either of them may cause at least transient injury to an animal. Carbon bisulphid produces in many animals a rather characteristic worms can be carried out in this way it seems lesion in the form of an inflamed area, about the size and shape of a hand, in the cardiac portion of the stomach, and occasionally an old or weak animal dies as a result of treatment with this drug to remove bots.

Oil of chenopodium is occasionally toxic to persons and to dogs and an occasional patient dies from chenopodium poisoning. Chenopodium appears to be reasonably safe for horses, as Wright has recently reported its successful use on 2,000 animals, and states: "No bad effects were noted in any of the animals." Wright follows the chenopodium with raw linseed oil or with an aloes ball. However, one report has come to my attention of bad effects in connection with the administration of oil of chenopodium. In this case a mixture of oil of chenopodium and linseed oil were given by the stomach tube. The animals treated subsequently showed labored respiration and an elevation of temperature. I have recently learned that one of the animals died, the postmortem examination showing a pronounced gastro-enteritis. The other animal developed laminitis and lost the soles of the fore-feet. Whether this condition was a coincidence or a sequel to the treatment is uncertain. The simultaneous administration of these drugs would increase the likelihood of injury to the patient.

Another objection to using chenopodium and carbon bisulphid together is that chenopodium should always be given with a purgative, whereas carbon bisulphid should not be given with linseed oil at least, as carbon bisulphid is almost entirely ineffective against bots when so given. The bots require long exposure to the drug and the drug must remain in the stomach. On the other hand, the chenopodium must be hurried to the large intestine with as little absorption on the way as possible in order to reach the worms there.—M. C. H.

## JOHNE'S DISEASE SUSPECTED.

I have two cows (different locations) that are causing me some worry. On dry feed the bowels are loose. As soon as they are on grass the bowels simply are under no control. One of these cows belongs in a dairy herd, and is getting a small quantity of cotton seed meal with corn and hay and day time pasture. The other cow gets a little alfalfa with her corn. What can I do to check or regulate the bowels? Have tried physics with no success.—G. C. E., Illinois.

Reply—On account of the persistence of the ailment we would suspicion Johne's disease. However, you give no description of the character of the stools, especially as to whether they contain gas bubbles, or do you say anything regarding the general condition of the cows, such as emaciation, or duration of the attacks.

In the way of treatment procure some 10-grain copper arsenite tablets (Abbott) and give such tablets in solution three or four times daily mixed with the feed. In the meantime, while waiting for these, if you do not have them in stock, I would suggest the following prescription:—Arsenic trioxide, 3 grains, copper sulphate, 1.5 to 2 drams. Give a dose three of four times daily mixed with the feed.

In addition to the foregoing suggestion, 2-dram doses of naphthaline given three or four times daily will also be of advantage. Also omit the cottonseed meal from the animal's feed.

Should these suggestions not correct the condition, give both cows a rectal injection of warm water and take a light scraping of the mucous membrance of the bowel as far forward as you can reach, placing the mucous thus obtained in a sterile bottle and forward it to us for laboratory diagnosis. At the same time, be sure to write another letter in which you give a complete history of the case and also symptoms including the color and general appearance of the stools and note particularly whether they contain gas bubbles immediately or soon after being voided.

## BOTULISM, HEMORRHAGIC SEPTICEMIA OR PARASITIC INFESTATION KILLS COLTS.

I have had several cases in young foals from 2 to 5 days old, which show symptoms ot uneasiness and refuse to nurse; urination is frequent and highly colored with blood. From 12 to 24 hours after the first symptoms appear the foal lies down and is unable to rise and continually groans with pain. The temperature is normal or subnormal. One case I observed showed a temperature of 93.5. This foal lived six hours under belladona and gelsemium treatment without any relief apparent. All cases have terminated fatally that have come under my observation.—T. C. M., Missouri.

Reply—From your meager description a positive diagnosis is well nigh impossible. You should have made a postmortem examination of at least one of these colts, and even though no pathological conditions had been found exclusion of same would have made a definite diagnosis possible, by excluding one of the three conditions we shall name to you as being the possible cause of the death of the foals.

We think that the deaths were due either to botulism or to infestation with Strongylus armatus (sclerostomum equinum) or sclerostomum bidentatum or to hemorrhagic septicemia; we think most likely the latter was the cause, though the temperatures are conflicting.

In regard to botulism this may or may not reveal pathological lesions, but the fact that temperatures were normal or subnormal, and particularly the subnormal temperature would point strongly to botulism. Botulism in sucklings does not necessarily mean that the little animal itself is infected with the bacillus botulinus, but its mother may be infected, yet not sufficiently for her tc show symptoms of the disease, but sufficient for the toxin which is eliminated in the milk to affect the young and cause its death.

The postmortem examination would of course readily reveal any worm infestation such as the Strongylus armatus, etc. We would suggest that if you have any more trouble of this kind that you make a postmortem examination and would very much like to have you communicate your findings to us, reminding us that you have written a previous letter, or rather give a complete case history in connection with the findings.

A careful autopsy usually reveals the presence of hemorrhagic septicemia. This disease commonly attacks the young and passes by the adults, at least until a later time.

It is rather difficult to recommend treatment in view of the fact that a positive diagnosis under the circumstances cannot be made. However, if it is botulism a change from infected food to non-infected food for the mother is of course of prime importance. Then these colts not yet showing the ailment may be injected with a polyvalent botulism antitoxin.

If due to Strongylus armatus, the value of treatment is quite problematical, as these parasites, as you know, while great numbers of them may be found in the intestines they very naturally inhabit the blood vessels, especially the mesenteric and colic arteries and cause thrombosis. Those parasites that are in the intestines may be removed by the usual anthelmintics; oil of chenopodium administered in castor oil, being the one of choice. To reach those which have migrated into the blood vessels is a more difficult problem. However, we would suggest that you try the effects of an intravenous injection o fsodium cacodylate; for the foals which you mention we would recommend according to their age or weight from 7.5 to 10 or 15 grains dissolved in distilled water and repeated in about a week or 10 days. Also change the drinking water from a low-lying supply to that obtained from an upland source or well. If hemorrhagic septicemia, use the sodium cacodylate and biologics; also isolate.

## SUPPURATIVE OR SEPTIC LYMPHANGITISM IN MARE.

A young mare was all right in the evening and together with other horses was taken to a nearby creek for water. The ground was icy but the owner assures me that he watched her well and declares she did not slip or injure herself. She was put in the barn during the night together with the other horses. In the morning she was very lame on the left hind leg, the whole leg was somewhat swollen, respirations rapid, temperature 102.3 degrees F., pulse rapid but strong, loud intestinal rumblings, and she showed great pain in the left hind leg. Examination revealed an abscess deep in the muscles opposite the pin bone, but having no connection with the bone. It contained ill smelling pus and the treatment con-

sisted of laying the abscess wide open, disinfectants and general treatment. She could lift the leg from the floor, but most of the time did not support weight on it. The pelvis was not fractured.

What puzzles me is that she would show so much lameness, local pain and swelling from a small abscess. Can you tell me why? —O. W. J., Iowa.

Reply—From your description it appears that the animal was suffering from suppurative or septic lymphangitis, a condition which is naturally very painful.

## TRANSMISSION OF DOG MANGE TO MAN.

Is mange of the dog transmissible to man? —H. M. B., Iowa.

Reply—Yes, mange of dogs and horses and probably that of other animals is transmissible to man, but the skin of man being foreign soil to the animal mange mites the disease yields readily to treatment, such as a simple sulphur ointment or better still the compound sulphur ointment (N. F.).

## JAUNDICE IN THE DOG.

Kindly describe latest and most successful treatment for jaundice in the dog. Also the percentage of mortality to be expected.—H. A. J., Georgia.

Reply—My experience in treating this disease for thirty years is that jaundice in the dog is an extremely serious and fatal condition, it rarely occurs as a simple catarrhal jaundice as it so frequently does in man. In dogs, jaundice usually seems to be due to some serious chronic condition which by the time the jaundice manifests itself is not amenable to treatment.

There is no "latest" treatment, it is still being treated along classical lines that have been in use for many years; starting out first with repeated purgative doses of calomel with an equal amount of bicarbonate of soda. The purgative dose of calomel for the dog is from three to ten grains, according to the size and age of the animal; this is followed up by some with mildly purgative or merely laxative doses of salines in conjunction with carbonate of potash, which has the property of increasing the liquifaction of bile.

After this treatment is continued for ten to fourteen days and the patient has not shown marked improvement under it; give the following:

℞ Ammon. chlor. ..... ʒ yss
Syr. ac. citrici ..... ʒ vj
Aquae q. s. ad. ..... ʒiij

M. Sig.—One dram in water, t.i.d. after meals.

The rationality of the above prescription lies in the fact that ammonium chlorid has a stimulating action on all mucous membrane and its value in jaundice would lie in its stimulating the mucous tissue of the liver, gall bladder, gall ducts and thus promoting liquifaction and the outflow of the bile instead of having it dammed up and being absorbed.

## ABNORMALLY LONG GESTATION PERIOD.

Is it possible for a cow to carry her fetus up to within six days of eleven months? I delivered one that was said to have carried the fetus this long.—W. H. M., Illinois.

Reply—Yes. You do not state whether the calf was alive or mummified or in what condition. However, Fleming's Veterinary Obstetrics says it is possible for the period of gestation in the cow to run 158 days, about 11 4/5 months and still give birth to a living calf. In the same work, a number of cases are mentioned of gestation periods of 330 days (about eleven months).

## COW'S MILK UNFIT FOR FOOD.

What diseases of cattle render the milk unfit for food for babies or adults?—H. A. J., Georgia.

Reply—Tuberculosis, cow pox, ring-worm infesting the udder, all febrile diseases and all digestive troubles; in fact, if a cow is suffering from any systemic ailment at all, her milk is unfit for human use, for ethical if not for pathologic reasons.

## ANTIDOTES FOR ARSENIC POISONING

What is the best antidote and dosage for arsenic poisoning in a cow, due to dipping; also what is the after treatment? Have you any books on different antidotes, or notes of any kind?—H. H. B., Arkansas.

Reply—The poisoning from dipping is not due to absorption, of arsenic through the skin, but is due to the animals getting the arsenic into their stomachs by licking themselves, or licking each other and by grazing on grass or other forage on which the dip has dropped,

or to animals drinking a portion of the dip where they have been driven long distances without water and are near perishing from thirst when dipped.

The official chemical antidote is ferri hydroxidum cum magnessii oxido. For making this preparation most conveniently, you can purchase from such concerns as Squibb & Son, Parke, Davis & Co., Mulford and others, the two ingredients ready to pour together. The dose is practically ab libitum.

For cattle we would recommend from eight to sixteen ounces to be repeated every one-half hour for three or four doses, followed by demulcents. Another good antidote, much easier to use because it needs no preparation, is dialyzed iron.

Other lines of antidotal treatment may be found in Nunn's Toxicology, or a larger book on the subject is Lander's Veterinary Toxicology.

## HOT WEATHER AND "SHORT WINDED" HORSES.

I am having quite a lot of horses that are panting and do not respond to treatment. I have used several of your prescriptions and thought I would write and see what you thought was the best drugs to use. Also, what you think about bleeding a horse that is quite fat. This horse will pant until 10 o'clock at night after he makes a trip pulling a log wagon.

Please let me know what you think is the best treatment for panters.—C. E. C., Indiana.

Reply—For horses that do not sweat and consequently suffer severely from the heat, I recommend. First, that they be fed a bran mash every evening feed. Second, throw cold water over them, especially on the head and neck when they come in from work, also give them a few swallows of water. If they have long coats, clip them.

Put them on the following medicine:

℞ Tr. Arnicae rad. .....
Fldext. pilocarpi .....
Spt. aeth. nit.....aa ℥ iv

M. Sig.—Give three ounces in a pint of water three times daily. After the secretion of sweat is established give once or twice daily until the skin function is fully established.

As to "bleeding," that would give only temporary relief and the animal would be in the same condition again in 24 or 48 hours.

## ASTHMA IN DOG.

I was called to see a hound bitch suffering from want of air, which put me very much in mind of a horse with the left pharyngeal nerve paralyzed.

Can you suggest anything that would help? She cannot stand running but a short distance. —E. E. D., Illinois.

Reply—From your description it appears that the dog is suffering from asthma, a very common ailment of dogs.

We might have been a little more positive in our diagnosis had you given more detail, such as the age of the dog, the condition, how long affected, whether the difficult breathing is of sudden onset, whether it is worse at night, etc.

If it is asthma, the following treatment will be helpful:

℞ Fldext. stramonii ..... ℥ ss
Fldext. gelsem. ..... ℥ j
Fldext. lobeliae ..... ℥ jss
Syr. aurantii ..... ℥ ss
Aquae q. s. ad..... ℥ ij

M. Sig.—One teaspoonful every hour or two until relieved. Also administer (diluted) eight minim doses of Fowler's solution, three times daily and keep her bowels open.

## CHICKEN DIPHTHERIA.

I am mailing you a chicken's head packed in boric acid and cotton. In the throat you will notice diphtheria patches. The symptoms, as far as I could learn from the owner, were as follows: Sneezing, gapping, loss of appetite, comb on head turns dark and in from three to four days they are dead. All infected birds die and the death rate is from four to eight a week. On autopsy I was unable to find any lesions other than those in the throat.

I made a diagnosis of avian diphtheria. Was I right? What is the tratment? Is the roup vaccine indicated and what is the length of immunity derived from the roup and fowl cholera vaccine?—H. H., Indiana.

Reply — Bacteriological examination of the diphtheritic membranes in the pharynx of the chicken showed the presence of the necrosis bacillus as well as streptococci and small Gram negative bacilli of the size and characteristics of the B pyocyaneus Considering the above findings we have to deal in this case undoubtedly with a mixed infection or "chicken diphtheria." Your diagnosis was correct.—C. A. Z.

# Pointed Opinions on Live Topics

*By READERS of VETERINARY MEDICINE*

## Report of New England Bovine Tuberculosis Eradication Conference

THE conference was opened on Wednesday morning, June 22, at 9:30, by Dr. E. W. Babson, president of the Massachusetts Veterinary Medical Association. The Doctor stated the purpose of the conference and called upon Dr. Lester H. Howard, director of the Massachusetts Division of Animal Industry to give the address of welcome, which he did in a very sincere way.

The next speaker was to have been Dr. John R. Mohler, but owing to very important duties assigned to him by the Secretary of Agriculture, Dr. Mohler could not attend the conference. In his absence, Dr. J. A. Kiernan, chief of tuberculosis eradication division, was asked to act as chairman of the conference, and by the paper he read on tuberculosis eradication and the splendid way in which he handled the meeting, he added to his popularity as a leader. Dr. Kiernan's paper will be published and widely distributed among sanitary officials and veterinarians. It will be found to be a broad gauged article and a tremendous weapon in the hands of those advocating the eradication of tuberculosis, either from an economic proposition in the conservation of livestock or as a public health measure.

Dr. A. W. Gilbert, commissioner of agriculture of Massachusetts, was the next speaker. He regretted that many members of the legislature were not in attendance at meetings of this sort, so they might become thoroughly acquainted with the importance of the work.

Dr. Thos. E. Maloney of Fall River, Mass., was next called upon and he gave a splendid talk on the opportunities of the veterinary profession in rural communities in directing sanitation, breeding and agriculture.

The next speaker was Dr. A. J. DeFossett, inspector in charge of tuberculosis eradication in Vermont, and assistant livestock commissioner of Vermont. Dr. DeFossett spoke in the absence of the Hon. E. S. Brigham, commissioner of agriculture of Vermont.

Dr. DeFossett gave a resume of the progress of the work in Vermont and brought out more clearly than the modesty of the commissioner himself would have permitted, the strong executive ability of Commissioner Brigham and the rapid progress of the work even under disadvantages. His sister state was next represented by the Hon. A. L. Felker, commissioner of agriculture of New Hampshire.

Commissioner Felker gave a very able address reciting the trials and vicissitudes that are interfering with the efforts of those interested in this work in his state, but with the resolute courage of this honest official, there is but little doubt but what New Hampshire will be in the front ranks when there is a roll call of accomplishments.

Hon. J. M. Whittlesey, commissioner of domestic animals, next spoke for Connecticut. Whittlesey is one of those who always gets along without much trouble and he is surrounded by such good company that he usually gets his little state in line rather promptly, consequently he reported everything progressing nicely.

**The Manufacture of Tuberculin.**

Dr. Marion Dorset, chief biochemic division U. S. B. A. I. spoke next. Dr. Dorset was in good form and gave a wonderfullly interesting discussion of the Preparation of Tuberculin for subcutaneous intradermic and ophthalmic tests. He also spoke briefly on anaphylaxis and the theory advanced by some as to the part this phenomena plays in a tuberculin reaction. He mentioned the advance in medical science during the past 30 years, tuberculin being one of the most important discoveries. Dr. Paul Pincus was the first to suggest the name Tuberculin. Koch, however, was the first to

discover tuberculin, 1890-91, at that time using it as a curative agent for tuberculosis. In 1892 its accuracy as a diagnostic agent was determined. There has been practically no change in the method of preparing tuberculin during the last 30 years. It may be prepared by using bovine, human or avian types, but the human type is the one generally used. The active principle is not known but it is believed to be a proteid substance not destroyed by heat. Tuberculin is tested for its potency by injecting guinea pigs. The accuracy of the test is only comparative and not exact, but when recognized principles are adhered to in the production of tuberculin, a satisfactory tuberculin should be produced.

Subcutaneous tuberculin is made by diluting Koch's Old Tuberculin (O. T.) with a watery solution of carbolic acid, using about one-half of one percent solution. The strength of tuberculin is determined by the amount of O. T. per cc. Carbolic acid or glycerin cannot be used in making ophthalmic tuberculin, as they would be irritating to the eye, consequently it is a precipitated product. There was produced at the bureau during the past year, five million c.c. of subcutaneous tuberculin.

**Bovine Tuberculosis a Public Health Problem.**

Dr. Dorset's address was followed by one by Dr. Milton J. Rosenau, professor of preventive medicine and hygiene, Harvard Medical School.

Dr. Rosenau who has had unusual training and been a prolific writer, has the added accomplishment of being able to tell others the things he knows and believes, and he simply spellbinds his audience. At the present time he is devoting much of his time to milk problems. He stated there is so little difference between human and bovine tuberculosis bacillis, that they are spoken of as different types and not as species. They are interchangeable but vary in degree. The avian type is not transmissible to mankind. Nine percent of all persons dying in the United States die of tuberculosis, 30 percent of all those dying between the age of 15 and 16 die of tuberculosis. The percentages are much higher in Europe. Tuberculosis of the lungs is almost always due to the human type. The bovine type attacks glands, bones and intestines, and not infrequently develop into what is termed "galloping consumption."

Speaking of immunity he described the different methods of vaccination that have been attempted but as yet the only known method by which any immunity is conferred is by natural infection during childhood. If the infection is mild and the organisms are not in sufficient number to be lethal, the tissue becomes calcified and walls off the foci. Subsequent infections do not occur but the primary infection may be subject to aggravation. We see a similar condition in syphilis. The primary infection may become aggravated but one suffering with syphilis does not become re-infected.

Tuberculosis is contracted largely during the period of youth and also largely through the digestive tract.

Speaking of statistics for market milk on the average about 10 percent of all market milk of big cities contain tubercle bacilli sufficient to infect guinea pigs. About 2 percent of infected cows have udder infection. Tuberculosis of the muscles is exceedingly rare, consequently the transmission by eating meat is not of great importance. The natural way of infection from cattle to man, is by milk, and so it is easy to understand why from one-fourth to one-third of infants dying under the age of five years from tuberculosis, die from bovine infection.

**The Intradermic Test Favored.**

The intradermic test was next discussed by Dr. Geo. E. Corwin of Hartford, Conn.

Dr. Corwin is a strong advocate of intradermic test, believing it to be superior to all other single tests. He prefers two observations after injecting, the 48th hour and the 96th hour.

The next paper was by Dr. A. J. DeFossett. "Combination Tuberculin Tests." This paper is published in full in this issue of VETERINARY MEDICINE.

The next speaker was Dr. F. Torrance, veterinary director general of Canada.

Dr. Torrance gave a brief and concise report of work on accredited herds in Canada, showing that while not carrying the work on in the large scale that it has reached in the United States, still the work is being thoroughly done and increasing rapidly.

In the evening there was moving pictures as an object lesson in controlling disease in livestock.

**Some Experiments in Tuberculosis Transmission.**

The first speaker on the morning of the 23d was Dr. E. C. Schroeder, in charge B. A. I.

experiment station at Bethesda, Md. Dr. Schroeder dispensed some valuable knowledge in the way that brought favorable comment from nearly everyone who listened to him. The subjects he discussed were so important and he discussed them in such a way that his address is sure to do incalculable good, since his audience was so representative, the information will be carried to nearly all points in the East.

Dr. Schroeder told of a very interesting experiment that has been carried on at the station, by keeping healthy bovines for six years in a building separated by an alley 28 feet wide, from another building in which tuberculous animals were housed, without infecting the healthy animals, notwithstanding that flies and rats in all probability passed from one building to another. The two groups of cattle however were cared for by an entirely different set of attendants.

Cattle may be pastured close to each other with safety providing the fence or fences prevent actual contact; this, of course, means a tight fence or a double wire fence.

Hogs cannot be kept with safety next to tuberculous cattle, separated by a wire fence on account of their habit of eating the cattle feces.

Another experiment was the changing of healthy cattle to stables that had been occupied by tuberculous cattle. The stables were thoroughly cleansed but not disinfected. This interchange had been going on a couple of times a year for over 7 years without infecting any of the healthy cattle.

Experiment showing how quick the tuberculous organism loses its virulence when exposed to the sun's rays, was demonstrated by painting a piece of glass with tuberculosis cultures and exposing the glass to the sun. Thirty minutes' exposure being sufficient to render the culture non-virulent for guinea pigs. Dust is evidently not a serious carrier, but it is quite a different story when the organisms are protected from light; the least covering of manure or other litter seems to supply the necessary protection.

Infected rats may be carriers as long as a year, therefore rats and mice should be included in the cleaning up process. Streams flowing from enclosures holding tuberculous animals are dangerous to animals drinking the water farther down the stream.

Dr. Schroeder believes that every animal that gives a true tuberculin reaction is tubercular and evidence of infection can be found if the search is sufficient and proper. This has been his experience invariably.

He regards the reacting bull with apparently sound genital organs as not an important factor in spreading tuberculosis to cows, when kept separate excepting at mating time, but he believes there is much danger in diseased cows infecting the bull, if any of the bowel or vaginal discharges contain the organisms of tuberculosis.

In closing Dr. Schroeder wished to be understood very positively that Bovine Tuberculosis is transmissible to mankind, and that Bovine Tuberculosis can be absolutely eradicated.

Following Dr. Schroeder, Dr. J. F. DeVine gave a talk on the "Veterinary Practitioner and His Relation to the Tuberculosis Campaign." He appealed to all practitioners to join the Federal and state forces in eradicating this plague.

Prof. H. R. Smith, livestock commissioner of Chicago Livestock Exchange, spoke of the great importance of the Accredited Herd Plan and explained how rapidly it is growing in the Middle West, mentioning particularly how fast the counties are coming to realize the advantage of employing a county veterinarian. He stated that the whole subject rests on an educational campaign and that demonstrations by moving pictures is a wonderful help. He urged the universal adoption and the extensive use of the intradermic test.

Hon. W. A. L. Bazely, commissioner of conservation of Massachusetts, then took the period that had been set aside for his Excellency, Channing M. Cox, governor of Massachusetts. Mr. Bazely's remarks were quite in keeping with the work of the conference in that he pointed out that the great question today is conservation, and how are we to square the natural resources with the present conditions.

Autos, for instance, have made extensive traveling so easy as to threaten the annihilation of our fish and game. Forest fires are destroying many more trees each year than it is possible to reforest. Forest fires are largely due to careless travelers.

The next two hours were given over to brief talks by breeders and state officials.

**An Unexplained Occurrence of Tuberculosis.**

Mr. Walter Kerr of Cohassett, Mass., spoke of the advantages of a tuberculosis free herd.

Mr. John S. Clark of Hardwick, Mass., who has been associated with a herd of about 400 purebred Guernseys for a number of years, told of an interesting experience.

There had not been a new female bovine brought on the place for 30 years. All animals had been tested for 13 consecutive years, without a reaction. On the fourteenth test, one reactor was found. The source of the infection has not been determined, but two possibilities are under suspicion. One is, that deer frequently mingle in the pastures with the cattle, and the other is, that streams that flow through the pastures of adjoining farms also flow through their pastures.

Mr. Church of Albion, R. I., gave the history of eliminating tuberculosis from his herd and the advance of the work in Rhode Island.

Mr. Hinckley, president Massachusetts Federation of Farm Bureaus, spoke of the many advantages of the Accredited Herd Plan. He believes it is the best advertisement and best insurance a man can have.

Drs. Guy Chesley, Harrie Peirce, Reedy and Colton each gave a few minutes' talk on the Accredited Herd Plan. All agreed that it is a splendid thing, and destined to control tuberculosis.

Dr. J. F. Rider, B. A. I., inspector in charge, for Boston, cited some valuable statistics on meat inspection with reference to tuberculosis.

Dr. C. C. Connelly, inspector in charge, meat inspection, Burlington, Vt., gave a fine paper on obscure lesions of tuberculosis.

The afternoon session was then closed by a talk by J. F. DeVine on Bovine Infectious Abortion and a paper read by Dr. W. W. Williams, on Herd Management in the Control of Genital Diseases.

A banquet was held in the evening at the Somerset Hotel. The ladies having had a delightful day as guests of the Massachusetts association, joined the men at the banquet. Dr. Crossman acted as toastmaster and called upon Commissioners Felker and Whittlesey, Prof. Smith, Drs. Kiernan, Eichorn, Howard, Maloney and DeVine.

The evening was hot and the toastmaster cautioned all the speakers to be brief and no one took the chance of defying him except the dauntless Maloney. This over, chairs were pushed back and dancing began. The dancing was interrupted at four intervals by five young ladies who delighted the audience with esthetic dancing. Their adornment was quite in keeping with such a hot night and their grace and beauty of form makes us suspect that they were hand-picked by Dr. Ryan.

The following day there was observations and demonstrations of the various tuberculin tests at the New England stockyards and the New England Dressed Meats & Wool Co.

The technic of manual examination for sterility by the writer and an operation, "Circular Amputation of the Cervix of the Cow," by Dr. W. W. Williams. Dr. Williams explained that this was a very satisfactory operation for chronic cervitcitis that does not respond to other treatment.

Those who have seen the young man's father, W. L. Williams, operate would expect that if there is anything in heredity that this young man should be a clever surgeon. Those who saw him do the operation can have no doubt as to the young man's skill. His technic was faultless and the completed operation simply classic.

Those who served on the local committee were: Dr. Lester Howard, chairman; Drs. E. A. Crossman, H. W. Peirce, E. T. Ryan, T. E. Maloney, C. A. Boutelle, D. W. Gilbert, and E. A. de Varennes.

We should be remiss if we failed to let them know that their efforts were appreciated. Their alertness in looking after the needs and comforts of everyone was an outstanding feature of the convention and was only equaled by the extraordinary attendance and intense interest that characterized the convention; one of the best of its kind ever held anywhere.

J. F. DeVINE.

## HEALING-OIL FORMULA.

In the June issue of Veterinary Medicine, G. E. P., Oklahoma, asks for a practical economical healing oil that will take the place of Vulnerary Balsam, Vulnerol, etc. I herewith submit two formulas that are economical, easy to prepare and will prove satisfactory as an all-round inexpensixe liquid dressing:

℞ Phenol. crystals. .....
Gum camphor .....aa ℥xvj
Crude oil .....q. s. ad. Ciij

Triturate the phenol and camphor together until liquefaction occurs, then add the crude oil and shake thoroughly. Apply to wound by

means of small brush, clean feather or absorbent cotton swab several times daily.

Another one is:

℞ Olei cajuputi ..... ʒ viij
Olei picis ..... O j
Pulv. naphthalini ..... ʒ xvj
Olei ricini. q. s. ad..... C ij

Add the oil of cajuput to the oil of tar, dissolve the naphthalin in the castor oil, and then add the two mixtures and shake.

Castor oil alone is one of the best wound dressings that one can use, but alone it is not a fly repellent.—R. F. R., Illinois.

## HOT WEATHER CEREBRATIONS.

In reading the opinions expressed by some writers in some veterinary periodica's one might draw the conclusion that the practitioner of veterinary medicine is slowly, but surely, going out of existence. In support for such conclusion it is necessary only to make a tentative survey of the fields left open to the practitioner while the insidious changes of the work for veterinarians is going on. The number of horses in the country is increasing according to census statistics; but all seem distressingly healthy and the demand for veterinarians to treat a sick horse is very small. As the change continues groups or herds of animals are treated with prophylactics instead of individuals with therapeutics. New fields that are opened which create a demand for the veterinarian's services are taken over by state or federal government men; they treat all the herds. The practitioner is gradually forced out; a seeming hardship, yet it would be impossible to get anywhere without government supervision in the control and elimination of contagious diseases.

The mo'ding of policy for the practitioner by practically all contributors to current veterinary literature, in my estimation, has been very effective; the task was made somewhat easier because of the training given students along those lines in most of the private veterinary colleges. The predominating quality all should possess was to do everything for the good of the profession even though somewhat detrimental to oneself; to abide by a code of ethics commendable for splendid principles was the ideal.

I was talking to a salesman who had called on M. D.'s, and veterinarians for a number of years and using his own words with regard to the personnel of the veterinary profession expressed himself thus: "They are on an average the nicest and easiest bunch of fellows I ever saw to deal with." They are nice indeed and easy without doubt. They believe almost everything they hear with reference to any phase of their profession; from the every-day song of the drug drummer to the highly scientific theoretical non-practical treatise of a self-admitted scientist on how certain diseases should be handled with a climax statement of how certain products for sale by the concern that he is interested in should be used. Pulling the wool over the eyes of the practitioner expresses it mildly.

He does not dare say anything about any of the products he has tried and found worthless because he might by doing so violate professional ethics which are not absolutely clear in his mind; or he might step on the toes of one of the sleek commercial members of the profession who would promptly arise with a fast beating pulse and insinuate odd and peculiar things which spells, "watch your step and stay in the traces, or be jumped on." Considering the natural timidity and acquired docility of most veterinary practitioners, is it any wonder that, to borrow the expression used by one member, we sit like knots on logs waiting for somebody to do or say something?

When a subject is discussed and somebody makes a statement not entirely in accord with your views think a moment before you openly, vociferously almost libelously denounce the brother member of your professional fraternity, it would be much better to be conservative, the fellow making that statement may be as near right as you are and he is entitled to a courteous consideration of his views. Remember that there are only three or four agents including biologics which can be counted on as nearly absolute specific in combating disease. Because a product is calculated theoretically to possess certain powers it does not follow that it will with absolute certainty possess them when put to a practical test. To illustrate: a vaccine or bacterin made of pure culture of typhoid bacilli when properly prepared and injected at proper interval will invariably produce an immunity to typhoid fever; but a vaccine or bacterin made of tubercle bacilli does not produce the same property with regard to tuberculosis. Thus we have two specific bacteria each producing a disease of its own characteristic symptoms, yet they will not

act alike in the respective diseases when made into bacterins. It is impossible to explain this feature. Until we know and can explain the whys and wherefores for failure to obtain at all times reasonably accurate dependable results from bacterins made of pure isolated cultures of one strain only let us act and speak reservedly about what polyvalent-mixed-shotgun-hit-or-miss bacterin will do. This little ramble is for practitioners who, like myself, are not overrun with calls during these hot days. JOSEPH EMONTS.

O'Fallon, Mo.

## METHODS OF PREVENTING CHOLERA IN HOG HERDS.

Six important rules for the prevention and treatment of hog cholera were recently advocated by Dr. H. Busman, inspector in charge of the Bureau of Animal Industry at Omaha, Neb., the suggestions being as follows:

(1) See that your hog lot is clean. Filth harbors and breeds disease.

(2) Keep out of your neighbor's hog lot. By so doing you will protect your drove and his, too.

(3) Segregate all hogs which show any signs of sickness of any kind.

(4) Allow no dogs or cats to run among the hogs. They may carry and spread germs of infection.

(5) Disinfect all quarters with cresol dip or by using quicklime in corners and wallows which the sun does not reach.

(6) Consult a reliable veterinarian and vaccinate with good serum.

## DEODORIZING THE SKUNK.

In all of the veterinary literature that I have at my disposal I am unable to find a description of the operation to remove the "musk bag" from a polecat and I am coming to you asking aid. Describe the operation in detail, field of operation and after care. Do both male and female have these organs, or is there just one or two glands that secretes, and how old are the cats before they should be operated on. A detailed description will be very much appreciated.—J. H. M., Georgia.

Reply—The description of this operation, together with the illustrations necessary to convey the complete information to a beginner is too long for this department. The inquirer is referred to the second edition of Whites Animal Castration in which a very complete and fully illustrated account of this operation is given.—C.

## FORMULA TO RE-ESTABLISH SWEATING.

Since 1909 I have been following your treatment as recommended on page 143 in Quitman's Veterinary Materia Medica and Therapeutics, for cases of sunstroke, with success in most cases where I can get plenty of cold water. However, it is sometimes hard to get cold water in a wheat field. I have had eight cases in the last two weeks, and only one death.

My greatest difficulty seems to be—after the animal is well and working, to get him to sweat. I have tried many remedies with little or no success.

Could you give me some information as to the best method of re-establishing sweat secretion after sunstroke?—F. G., Iowa.

Reply—After sunstroke, where the horse does not perspire and as a consequence, suffers severely from the heat, I would suggest the following:

℞ Tr. Arnicae rad. .....
Fldext. Pilocarpi .....
Spt. aeth. nit. .....aa ℥ iv

M. Sig.—Give three ounces in a pint of water three times daily. After a fair degree of sweat excretion is established, the above prescription may be administered only twice daily until normal skin function is re-established.

In addition to the above, the administration of Fowler's solution in one-half to three-fourth ounce doses three times daily is of value. We also believe that the administration of a handful or two of linseed meal in the feed acts synergestic to the above mentioned drugs.—Q.

## KINSLEY ANTI-ROOTING OPERATION SUCCESSFUL.

Dr. A. T. Kinsley's new method of operating on young pigs to prevent rooting, that he wrote about in the February issue of the Journal, I believe is all right. This operation has been a very successful one on sows, in my practice. About two years ago, a farmer asked me to do something to keep his old sows from rooting. At that time I had never heard of the operation, although I suspected it had been tried out before. This time I just severed the tendon on each side of the snout about two or three inches back.

Since that time I have found a better way.

It is to cut a piece out of the tendon, about one-half inch long. I cut directly over the tendon, which is about the size of a lead pencil, and pick the tendon up with forceps, and cut out a piece. A hog catcher, made on the plan of a dehorning shoot is good.

I catch the sow by the neck and use a horse twitch over the snout to hold the mouth closed. I have operated on as many as one hundred sows and find this method to be O.K. I do not think it best to operate on fine pure-bred sows, as it causes the cartilaginous ring of the nostril to drop down some and can easily be observed. W. OVERFIELD.

Veedersburg, Ind.

## MILK AND ADRENALIN FOR CONJUNCTIVITIS.

A farmer near New York consulted me stating that he had eight suckling pigs affected with eye trouble. I did not see the animals, but from his description, I concluded that it was a case of conjunctivitis caused by the infection at the time of birth.

My advice to the farmer was to use sterilized hot milk as a wash and twice daily several drops of adrenalin hydrochlorid solution in the eyes. After ten days' treatment, I got a letter of thanks from this farmer for my good advice.

It might be worth while to try this treatment further. J. SERLING.

New York, N. Y.

## SUCCESSFUL ECZEMA APPLICATION.

I noticed several reports in VETERINARY MEDICINE of cases of eczema. I had a very bad case of long standing, and it resisted all manner of treatment. The disease manifested itself in the front fetlock, from the hoof to above the fetlock joint, so I compounded the following formula and it certainly worked fine for me. It can also be used on bad shoulders successfully. The formula is as follows:

℞ Zinci Sulphas ..... ℥vi
Plumbi Subactis ..... ℥vi
Tr. Opii ..... ℥iss
Hammelis Virginicae ..... Oiss

M. Sig.—Cleanse parts thoroughly and apply once daily. You can also saturate cotton and bandage the parts if necessary, or it can be used ad lib. H. F. KIDWELL.

Ione, Calif.

## NOTE WHAT THE HEAT WILL DO TO A MAN.

Where is the inducement for a young man to take up the study of veterinary medicine. We can see by reports that there was a small entry in 1920. Is it any wonder? The cost and requirements are too great, and I want to say if they could get a glimpse of an actual country practice, such as removing decayed placenta, a fetus that has been dead for several days until a slippery, filthy mass, or remove the remains of one that was carried in the uterus for six months. If they would brush up against a few of these I imagine they would cry "Oh, mamma, deliver me," then after washing in the many waters still have that pregnant odor. Oh, it's simply fine, it is only the odor of the country veterinarian and it only takes ten years of hard study and a small fortune to get the privilege of doing the job. Go to it, boys. I will say there is a certain number who get fairly good positions, but these are not for the common lad. It is amusing to see the ones wanting jobs in serum plants. Well, I will ring off, with best regards to all the boys.—One of the Gang.

## REMOVAL OF SKIN FOLDS THAT OBSCURE THE VISION IN SWINE.

I noticed in the February number of VETERINARY MEDICINE an article describing a condition in swine in which there is a growth between the ear and eye, which crowds the eyelids over the eyes and obstructs the sight, and a query asking if this could be removed surgically. Dr. A. T. Kinsley in reply to this, advises operating and asks if anyone has tried this, and with what success.

I will say that during the last year, I have operated on several sows with this condition. The operation is rather simple and highly successful, if properly performed.

The most difficult part of the procedure is deciding accurately the proper amount of tissue to remove. The fibrous growth should be pretty thoroughly removed, but always be careful to leave tissue enough just above the eye to place deep secure sutures in without getting into the eyelid, which would cause some eye irritation.

The length, width and depth of the incision depends on the size of the growth. The sutures should be deep, passing into the tissue below the skin, about one-half the depth of

the incision. Of course, antiseptic precautions should be used as we should get healing by primary union, which is not difficult in swine. It is also well to use an anesthetic. Of course chloral in swine. In using chloral in any animal I always have a dose of camphorated oil ready, as it is quite a help in case an overdose of chloral is given.

The first sow operated on for this condition, about eight or nine months ago, I did not remove enough tissue, and while it was of some benefit, the sight was still somewhat obstructed, but with a little experience, this operation is quite successful. A. D. Glover.

LaBelle, Mo.

## VETERINARIANS.

Veterinarians treat all the ailments of those faithful servants and patient, devoted slaves whose lives are given and whose defects are all acquired in the service of humanity.

Veterinarians treat all varieties of animals and all grades of each variety from the highest type of purebred to the lowest scrub, but we never have to treat any animal of which we need be ashamed or for whom we have to blush.

Veterinarians do not treat social evil diseases nor any disease acquired in illicit ways.

Veterinarians make the world a safer place in which to live. By eradicating the diseases of animals which are communicable to man. By holding in check, or entirely stamping out destructive animal diseases which lessen the supply of human food or render a large portion of such supply unfit for food or making it, if used, a menace to health or life.

Veterinarians comprise what is probably the most extensive, the most efficient and the most scientific body in the world engaged in the acquisition of knowledge which is of direct benefit to mankind—the Bureau of Animal Industry.

Veterinarians advise owners of live stock in breeding animals for each and every specific purpose, and how to properly feed all varieties of animals for any direct object.

If we are told that ours is a profession which has no lofty ideals or has no inspiring motive or is a material effort of acquiring dollars and cents I wish to call attention to the cases where through the elimination of the diseased family cow, we have saved the life of an idolized child whose value cannot be measured in dollars and cents.

Think for one moment of the great, splendid, scientific and efficient work now being done and which has been done in recent years in the eradication of anthrax, tuberculosis, hog cholera, black leg, foot-and-mouth disease, Texas fever, glanders and other communicable diseases which might be mentioned.

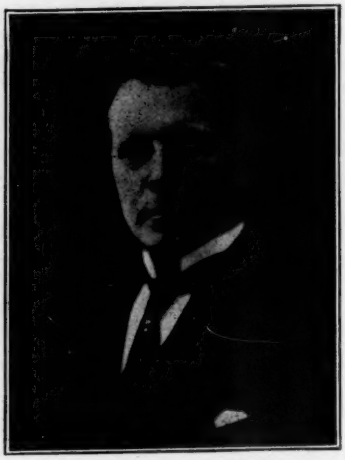
The lives saved. The health saved. The money saved. The food increased. The human happiness increased and then dare to mention low ideals. W. L. WEST.

Belfast, Me.

## OUR PATIENTS.

Our profession has some handicaps but it also has some splendid aids to the practitioner. Our patients are honest and upright. They don't lie, steal, cheat, commit arson or murder. They do not talk about their neighbors. Do not profiteer, nor indulge in scandal. Do not flirt or alienate affection. Do not bear false witness. Do not have social evils. Do not toady to wealth, power or influence. They are not extravagant. Are not spendthrifts. Are neither purseproud nor arrogant. They are clean morally and are grateful. W. L. WEST.

Belfast, Me.

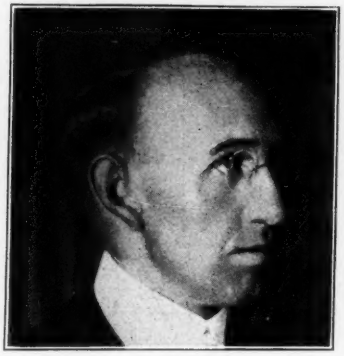


David S. White, Dean of the Veterinary Department of Ohio State University, who will preside at the Denver meeting of the American Veterinary Medical Association meeting next month.

# New State Veterinarian in Illinois

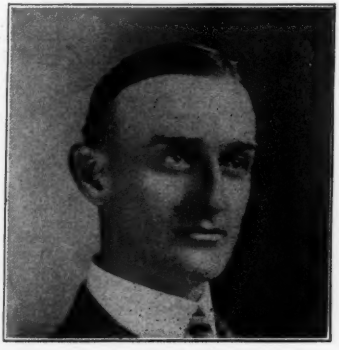
**Dr. F. A. Laird, a practitioner of Auburn, Illinois, has been appointed State Veterinarian of Illinois, to succeed Dr. A. T. Peters, whose term expired July 1. Doctor Laird is a graduate of the Chicago Veterinary College, class of 1902. He will assume the duties of the office August 1.**

**Dr. J. C. Julien of Delphi, Ind., appoined State Veterinarian of Indiana to succeed Dr. L. E. Northrup, whose term expired July 1.**



**Dr. William A. Stephensen, the new State Veterinarian of Utah. Dr. Stephensen graduated from the Colorado Agricultural College in 1916.**

**Dr. Robinson Smith, class of 1915, Chicago Veterinary College and the new State Veterinarian of New Hampshire. Prior to his appointment Doctor Smith was engaged in practice at Laconia, New Hampshire.**



**Dr. B. F. Davis, State Veterinarian of Wyoming, as he appears today. On page 93 of the July number of Veterinary Medicine you will find a likeness of Dr. Davis as he appeared at the age of 7. Dr. R. E. Naylor of Kansas City was the only one to recognize the juvenile Davis and thus win a year's subscription to Veterinary Medicine. Dr. O. E. Eliason, State Veterinarian of Wisconsin, was the favorite among the guessers. Nine having guessed that the boy on horseback was he.**

## SOME REQUISITES FOR ADMITTANCE TO THE PROFESSION.

A sound body in a sound mind. No others need apply.

A well grounded education consisting of at least a high school course but better still higher education if not procured at the expense of sound judgment.

A strong ethical character well grounded in honesty of purpose, tenacity, square dealing and stick-to-it-iveness.

High ideals with a determination to see that they are attained.

A lively interest in the affairs of the community in which we have cast our lot and the taking of a strong part in the citizenship of our town to see that affairs pertaining to our profession are well and thoroughly looked after.

Unity of purpose to the effect that the profession will think, act and vote as a unit on matters of interest to the profession at large.

There is no question but that if such a course obtained that the profession could get anything in reason that it went after. W. L. WEST.

Belfast, Me.

## HEAD OF ABBOTT LABORATORIES DIES.

Dr. Wallace Calvin Abbott, who died at his home, 4605 N. Hermitage Ave., at 1:30 a. m., July 4, was born in Bridgewater, Vermont, Oct. 12, 1857. His early education was obtained at the State Normal School, Randolph, Vt., the St. Johnsbury Academy, St. Johnsbury, Vt., and Dartmouth College, Hanover, N. H. Coming west, he worked his way through the University of Michigan, winning his degree as Doctor of Medicine in 1885. The following year he engaged in the practice of medicine in Chicago, building up a large practice on the north side and winning many friends.

It was during this time that Doctor Abbott established The Abbott Alkaloidal Company, now known as The Abbott Laboratories of which firm he was president continuously from the time of its establishment, more than 30 years ago, until his death.

For several years previous to his decease, Doctor Abbott had been in ill health. Anticipating his active retirement from the large and successful business which he had founded, he placed the conduct of The Abbottt Laboratories largely in the hands of his older employes, under a generous co-operative reorganization plan on which it has been operating for more than two years.

Doctor Abbott was a man of broad vision and great energy. He was an organizer of rare ability, warm-hearted and beloved by his employes, business associates and hundreds whom he had befriended.

Doctor Abbott was a pioneer in the field of alkaloidal medication. He labored incessantly through his writings, and personal contact with thousands of physicians, to bring about a more careful study of the patient, and the treatment of separate symptoms as they developed, as contrasted with the older method of treating by disease names only. His influence upon the medical profession in this respect has been profound.

For the past five years Doctor Abbott has encouraged extensive research work along the line of new medicinal chemicals. As a result, a number of the remedies, formerly made only in Europe, are now manufactured by The Abbott Laboratories.

He leaves a widow, Clara A. Abbott, and a daughter, Eleanor Abbott.

Dr. W. J. Ratigan has been appointed to a position in the department of pathology of the Charity Hospital at New Orleans, La.

—o—

Bids for a $50,000 veterinary building at the Alabama Polytechnic College have been asked for.

—o—

Dr. Thomas Frazier of Richmond, Va., is spending several months in Scotland visiting relatives.

—o—

Dr. W. A. Scott, Cincinnati '18, for the past two years supervising inspector, dairy and food division, Department of Public Health, Akron, Ohio, has resigned to take the position of chief dairy and food inspector of the Dairy and Food Division at Canton, Ohio.

—o—

Dr. V. H. Cubela has taken over the practice of Dr. Sillick at Darlington, Wis.

—o—

Thirty-five veterinarians and 14 physicians are on the present teaching staff of the New York State Veterinary College, New York City. Among them is Dr. Lachlan McLean of Brooklyn, known as one of the oldest veterinarians in the United States. He graduated 67 years ago.

# The Haver-Glover Page

PUBLISHED EVERY NOW AND THEN IN THE INTERESTS OF GRADUATE VETERINARIANS.

## BIOLOGICAL THERAPY EFFICIENCY

There are but two real factors incident to the belief of the inefficiency of biological products, with especial reference to bacterial vaccines or bacterins, and these are wrong diagnoses and the products themselves.

Regarding the former, the blame is not always on the man who makes the diagnosis, but rather on the man or concern who has made the diagnosis for him or has advanced a theory or other logic, by which the veterinarian is guided, naturally, because of his faith in the man or institution in which he puts his trust.

When it comes to the products themselves, inefficiency is most often due to the attempt at specificity or perhaps in a mixed product containing but a few species of organisms. Either being so narrow in their scope of usefulness that chances are against their producing any results because the disease producing organisms may not be represented in the product administered, and to the promiscuous sale to and administration by men not qualified to handle such products intelligently.

If all commercial institutions thought efficiency and field results only, there would be fewer state institutions attacking the lack of efficiency of commercial products. Furthermore, fewer veterinarians and livestock owners would feel that bacteriological therapy is lacking in value.

Again, if all commercial concerns confined the administration of their products to Graduate Veterinarians who by their training are best enabled to make correct diagnoses and properly administer biological products, the general opinion of the efficiency of biological products would become recognized, and the survival of the fittest would be the result. As a rule, the Graduate Veterinarian will buy only what he wants, while the other fellows buy what they can get.

Results are in accord with the use or abuse of diagnosis, products and ethics.

## HEMORRHAGIC SEPTICEMIA

Pathologically speaking, hemorrhagic septicemias have existed in numerous localities in the last six weeks, but from causes other than B. Bipolaris Septicum infections. We have examined material from cattle, swine, horses and chickens and except in one instance, and that in chickens, we failed to prove the existence of B. Bipolaris Septicum as a pathological invader, even by compliment fixation tests.

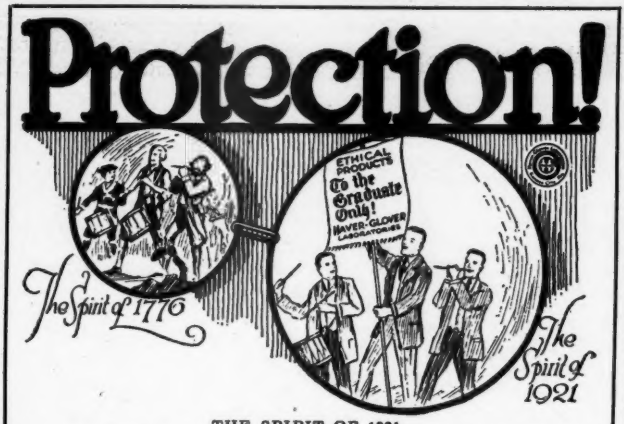
The foregoing is offered in contradiction of the general belief that hemorrhagic lesions constitute sufficient evidence for a diagnosis of "Hemorrhagic Septicemia" which, in the minds of many veterinarians, means B. Bipolaris Septicum infection.

Please note that, as stated, the bipolar organism was not incriminated as a pathological invader. This does not mean that this organism was always absent. To the contrary, it is usually present in some of the tissues because it is a normal habitat of all domestic animals regardless of health.

It is our opinion that unless this organism gains a virulence sufficient to enter the blood stream as a septicemic organism, it is of as little consequence as a pathologic disturber as the hay bacillus which we also find in respiratory, intestinal tracts, etc., of all animals.

Again, when this organism is encountered in the blood stream of diseased animals it is rarely, if ever, found alone, and streptococci are the usual associates.

Many diagnoses of so-called Hemorrhagic Septicemia are made because B. Bipolaris Septicum are found in tissues. It is advisable to think twice and act three times before accepting any such logic. All septicemias produce hemorrhagic lesions and many pathologic bacteria are capable at times of entering the blood stream as septicemic invaders. Keep this in mind and do not be deceived by any "NAME."




### THE SPIRIT OF 1921.

THE TIME has come when firms should no longer straddle the fence. A definite policy should be adopted, either to cater to, and protect the licensed Graduate Veterinarian or state definitely and honestly that advertising to "The Veterinarian Only" includes all men licensed by a state—Graduates and non-graduates.

Today "For the Graduate Only" means the confining of sales and all co-operation to the men who have graduated from recognized veterinary colleges by hard knocks and the expenditure of much time and money.

"To the Veterinarian Only" includes the whole veterinary public, too often, if not always, a misleading inference.

Consider this seriously, and, if you really care, align yourself with a concern that does protect your professional interests.

The Spirit of Protection for the Graduate today does, in most localities, favorably compare with the determined spirit conveyed in our American History.—"The Spirit of '76."

Every order received must be O. K.'d as to customer's eligibility before being passed to the assembling department. We take no chances—if we do not have complete record of name and Alma Mater the order is held for further information.

In sending that first order try to give us this information.

Thank you.

***What is a Veterinarian today?***

When a farmer treats his own animals is he a Veterinarian?

When Mother gives "little Willie" Castoria, is she an M. D.?

Perhaps the best and truest thing that has ever been said about Glover's Mixed Infection Vaccines is that you seldom hear anything but good things said about them.

That catalog is the finest I have seen—not only compact, but complete. It's a dandy reference book for any practitioner, and a copy of which I am proud to receive as a Graduate Veterinarian.

(The many complimentary expressions we have received pertaining to our catalog are indeed gratifying and we must say, greatly appreciated by the authors.)

# Matters of Current Interest

Cincinnati Humane Society has established a general veterinary hospital at 3155 Springgrove Avenue, near the location of the former Cincinnati Veterinary College and Hospital, and Dr. O'Flaherty is in charge.

—o—

Kinsley's article on Loin Disease is up to date in every way and will open the eyes of the British as well as some of our own people. —Jas. Waugh, Pittsburgh.

—o—

I operated on a skunk kitten lately and my wife says George White's operation could be done better without the rat tooth forceps. Just plain blunt forceps that would not damage the sacs and thus expose the contents and odor.—J. W. Penn.

—o—

Dr. A. T. Peters, retiring State Veterinarian of Illinois, will engage in the manufacture of a mineral stock food at Peoria, Ill. Dr. Peters was state veterinarian four years and prior to that state bacteriologist of Illinois for eight years. He will market his mineral food through veterinarians.

—o—

Dr. H. N. Strader has sold his practice at New Hampton, Iowa, to Drs. L. G. Gordon and F. C. Roach. Dr. Strader is now located in Des Moines, a veterinary inspector for the state of Iowa.

—o—

Dr. Charles S. McCoy, formerly of Sussex, N. J., is now located in Gouverneur, N. Y.

—o—

The personnel of the Tennessee Board of Veterinary Medical examinations is as follows: President, Dr. F. R. Yuree; vice-president, Dr. J. W. Scheibler; treasurer, Dr. W. M. Bell; secretary, Dr. M. Jacb.

—o—

Dr. Isaac Clark of Geneseo, Ill., is convalescent following a recent operation for appendicitis.

—o—

Dr. James O'Brien has been appointed to have charge of horses and be riding instructor at the country club at Newtonville, R. I.

Dr. H. C. Lucht has located in Lubbock, Texas.

—o—

Dr. L. R. Potter who quit practice some time ago to engage in farming, is going back to general practice again. Dr. Potter will locate in Wyoming, Iowa.

—o—

The Iowa State Board of Education has bought sixty acres of land which will be utilized by the veterinary department of the Iowa State College for experimental purposes.

—o—

Dr. W. G. Hollingsworth of Utica, N. Y., is the new president of the alumni association of the veterinary college of New York University, New York state.

—o—

Dr. A. E. Nelson, formerly of St. Joseph, Mo., is now located in Clarinda, Iowa.

—o—

Because he punched holes in horses ears for the purpose of inserting identification tags, Dr. Frank Flanagan of the Massachusetts Society for the Prevention of Cruelty to Animals caused the arrest of Dr. James O'Brien of Boston recently.

—o—

The state board of veterinary medical examiners of Texas held the semi-annual examination in Fort Worth June 20 and 21. Sixteen applicants were examined, thirteen of whom were issued licenses.

The examination was written, covering the following eleven subjects as prescribed by law: Anatomy, Physiology, Pathology, Obstetrics, Practice, Surgery, Materia Medica, Bacteriology, Medical Jurisprudence, Chemistry, Sanitary Science.

Papers were graded during the examination and licenses issued at the end of the session. The examiners are. President, N. F. Williams; vice-president, P. P. Starr, secretary-treasurer, F. E. Barnes. Other board members: A. E. Flowers, R. H. Hodges, W. G. Gregory, J. A. Harris. The next examination will be held in November.

# CHAMPION
## Syringes and Needles

CHAMPION Syringes may be obtained in 4 c. c., 8 c. c., 12 c. c., 25 c. c., 50 c. c. and 80 c. c. sizes, as well as those shown above.

The distinguishing feature of CHAMPION Syringes is the corrugated rubber packing, which reduces the frictional resistance between barrel and plunger to a minimum.

***Veterinary Catalog Will Be Sent on Request***

**Becton, Dickinson & Co.**

**RUTHERFORD, N. J.**

## JOHNIN TO BE USED IN INDIA.

You will be interested to know that I have just received a letter from the livestock expert in the state of Mysora in far off India relative to Johnin, the diagnostic test fluid, which this man read about in my article which appeared in the January issue of VETERINARY MEDICINE. It certainly is interesting to know that your publication has a world-wide circulation. F. B. HADLEY.

Madison, Wis.

## WEST VIRGINIA VETERINARIANS STRESS ABORTION AND TUBERCULOSIS OF CATTLE.

The regualr annual meeting of the West Virginia Veterinary Medical Association was held in the Hotel Chancellor, Parkersburg, W. Va., July 7-8.

Most of July 7 was occupied by the officers of the Association and the State Board of Veterinary Examiners, holding examinations for candidates who wished to practice in the state. The evening of the seventh the business affairs of the association were discussed and officers for the coming year elected.

The meeting was called to order by President S. O. Fisher of Charleston, W. Va., and the officers elected were Dr. W. E. Langford of Keyser, W. Va., chosen as president, and the faithful and efficient Dr. C. T. Higginbotham was re-elected secretary-treasurer.

The morning of July 8 the first speaker was Dr. J. F. DeVine of Goshen, N. Y., his subject being "Abortion and Sterility."

Dr. DeVine discussed these subjects for about an hour and a half, then all adjourned to Dr. Callender's office where a practical demonstration in handling the genital organs was given.

The association as a whole then went by auto to the edge of the city to inspect two herds that had been subjected to the ophthalmic and intradermal tests. In one of these herds, an extremely emaciated animal, which gave no reaction to either of the tests (ophthalmic and intradermal) was a subject of much interest.

She was so distressed under the slightest exercise that she breathed with her mouth open. As it seemed evident the animal would surely die in the near future, the owner consented to have her slaughtered.

(Continued on page 78)

# VITAMINERAL

## Decreases ABORTION, Prevents STERILITY, Eliminates MALNUTRITION, Corrects PARALYSIS, RICKETS

VITAMINERAL does wonders for Qualified Veterinarians. Contains yeast "vitamines." Animal life cannot exist without "vitamines." VITAMINERAL provides these "vitamines" in the most highly concentrated form known to science. To these "vitamines" we have added certain bone and tissue building "minerals" that are lacking, in sufficient quantity, in all natural and prepared feeds.

## VITAMINERAL—A 10 Years Success!

in the treatment of abortion, sterility, malnutrition and co-related diseases. In pure bred herds VITAMINERAL reduced abortion from 60 per cent to 5 per cent. In others sterility was entirely eliminated. Paralysis and rickets were corrected in a 600 hog herd. Sworn proof is on file. VITAMINERAL will do the same for you.

## Sold Only to Qualified Veterinarians

We do not sell the breeder or farmer. Qualified Veterinarians prescribe and get credit for VITAMINERAL'S wonderful results. COSTS LESS THAN ONE CENT PER DAY PER HEAD. One tablespoonful morning and evening is sufficient in ordinary cases.

## GET PRICE AND FREE BOOK

If you have abortion, sterility, malnutrition, paralysis, rickets and co-related cases write for FREE BOOK that tells what VITAMINERAL is and what it will do. Get VITAMINERAL price. Start treatments immediately. Results will appear in one week's time. WRITE FOR ALL FACTS TODAY.

## VITAMINERAL PRODUCTS CO.

1201 N. Washington St. -:- Peoria, Illinois

# Anti-Hog Cholera Serum
*versus*
# Salt Solution

**Water will not immunize hogs**

MANY OF THE CLARIFIED ANTI-HOG CHOLERA SERUMS NOW OFFERED ARE BUILT UP TO THE VOLUME OF BLOODY SERUM BY THE ADDITION OF SALT SOLUTION.

THERE IS NO SCIENTIFIC REASON FOR DILUTING SERUM. THE ADDITION OF WATER ADDS NOTHING TO ITS IMMUNIZING VALUE, AND SERVES ONLY TO CONFUSE EITHER THE VETERINARIAN OR THE HOG OWNER.

ADDING WATER NATURALLY REDUCES THE COST OF PRODUCTION PER CUBIC CENTIMETER, BUT IT ALSO REDUCES THE IMMUNIZING VALUE OF THE SERUM BY THE AMOUNT OF WATER THAT IS ADDED.

LEDERLE'S ANTI-HOG CHOLERA SERUM IS NOT DILUTED. IT THEREFORE COSTS MORE PER CUBIC CENTIMETER

THAN DILUTED SERUMS BUT IT ALSO POSSESSES RELATIVELY GREATER IMMUNIZING VALUE.

SUCH A SERUM AS LEDERLE'S, PREPARED IN A PLANT ESPECIALLY DESIGNED FOR THE PURPOSE, WHERE EVERY STEP IS UNDER THE DIRECT CONTROL OF VETERINARIANS WHOSE SKILL IN LABORATORY TECHNIQUE IS UNQUESTIONED, POSSESSES ADDED ADVANTAGES. THE LEDERLE SERUM, FROM THE IMMUNIZATION OF THE HOGS TO THE WRAPPING OF THE FINISHED PACKAGES, PASSES THROUGH EVERY PROCESS IN OUR OWN PLANT UNDER OUR OWN SUPERVISION.

**We offer this clear, refined and undiluted serum direct to veterinarians only, at a net price of two cents (2c.) per c. c., with shipping charges prepaid from our nearest office**

*Full Information on Request*

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Kansas City, Mo. . . 601 Firestone Bldg.
New Orleans, La. . . . 105 Medical Bldg.
San Francisco, Cal. . . . 163 Jessie Street
Minneapolis, Minn. . . . 633 Andrus Bldg.

**Water will not immunize hogs**

# DO ONE THING AND DO IT WELL

**We produce Anti Hog Cholera Serum and nothing more; and we believe we do that well. Our customers think so too.**

## GUILFOIL SERUM CO.

***Offices and Laboratory***

**18, 20 and 22 North Second Street**
**KANSAS CITY KANSAS**


(Continued from page 74)

On postmortem she showed hepatized patches in both lungs of probably septic origin, which accounted for her shortness of breath. All other organs were normal so far as could be determined, with the exception of an abscess about the size of a cocoanut, involving the surface of the liver and diaphragm. The exact nature of the abscess was not determined. It contained a considerable amount of necrotic cheesy pus that might have originated from either a foreign body or a tuberculous center. Grossly considered it had more the appearance of being the result of a foreign body.

After lunch the association was entertained by Dr. H. W. Turner of Pennsylvania, his subject being "Tuberculin Testing."

Dr. Turner devotes much time to this work and explained many practical points involved in a carefully conducted and properly interpreted tuberculin test.

In discussing the accuracy and reliability of any and all tests, he laid great stress on the individual conducting the contest. And so closed a very successful meeting of this association.—J. F. DeVine.

### PENNSYLVANIA'S NEW STALLION LAW.

The first stallion enrollment law in Pennsylvania was enacted in 1907. This original law was amended and strengthened in 1911. The latter law was amended by the recent legislature. The new law becomes effective Jan. 1, 1922. Under its provisions no unregistered stallion or jack shall be licensed or be used for public service in Pennsylvania. Any stallion or jack, the patronage of which in the opinion of those charged with the enforcement of this act, on account of unsoundness, inferior type or conformation may prove a detriment to the horse-breeding interests of the state, shall be refused a license; and when license is so refused the said stallion or jack shall not stand for public service in this state.

The annual license fee has been increased from $2 to $10. In order to obtain a license certificate, the stallion or jack under consideration in addition to being registered must be examined by a duly qualified and approved veterinarian who shall certify to both soundness and conformation.

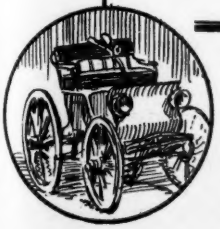
Registered stallions and jacks for which applications for licenses are made will receive

# PIONEERS

The
American
Veterinary
Supply Co.

the oldest exclusive veterinary supply house in the world — operating continuously under the one name and with the same clearly defined policy of catering to and protecting the interests of the qualified veterinarian.

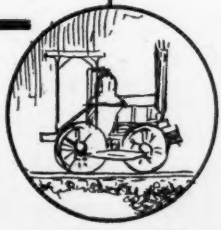
There is a reason as to why we have a larger clientele than any other veterinary supply house.



**The American Veterinary Supply Co.**

*"The home of Zip service."*

**Kansas City, Mo., Indianapolis, Ind., St. Paul, Minn.**



EVERY BOTTLE OF SERUM YOU BUY FROM

GOEBEL

is FRESH (Off test this year)

Three modern up-to-date Government Licensed Plants working to capacity which will guarantee you Serum throughout the season.

THINK OF GOEBEL

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*Day Phone Delaware* 1412—*After* 5 *P. M. and Sundays, Home Phone Jackson* 1015 —*Drexel* 800

84 North James Street, Kansas City, Kansas.

DISTRIBUTORS:

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Goebel Serum Co., Rochelle Street, Monroe, La.

Emmert Drug Co., Freeport, Ill.

license certificates in accordance wtih the merits of each case as follows: (1) Very highly commended, which means they are of superior breeding type, conformation and soundness; (2) registered and sound, and (3) registered but unsound. The Bureau of Animal Industry, Pennsylvania Department of Agriculture, will enforce the new law.

So far as is known, Pennsylvania is the first state to pass a stallion enrollment law which specifically states that only pure-bred and registered stallions and jacks can be stood for public service.

Dr. Robert Jay, formerly inspector in charge of hog cholera control work in Tennessee, has been transferred to California where he will be engaged in hog cholera control work cooperating with the state live stock sanitary officials. His headquarters are at Berkeley, Calif.

—o—

Dr. L. M. Russell has taken over the practice of Dr. L. M. Wright at Lowell, Wis.

—o—

Dr. Carl J. Norden of Lincoln, Neb., has sold his general practice to Dr. Lloyd Perrin, who for several years practiced at Platte Center, Neb., but more recently Superior. He took charge of the practice on July 1.

—o—

Drs. H. A. Trippier of Walla Walla, P. G. McIntosh and A. R. Galbraith, Garfield, are the new members who compose the board of veterinary examiners for the state of Washington.

## BUSINESS DEPRESSION FAVORS THE DRAFT HORSE BUSINESS.

It's Dobbin's turn to come up smiling. Now that economy is the main thing on the program, draft and light wagon horses are returning to the fore.

"Despite unfavorable business conditions," says Wayne Dinsmore, secretary of the Horse Association of America, "the demand for good draft horses and the price for them, has held up better than any other line of business of which I have any knowledge. Horsemen, wagon-makers and allied manufacturers will gain more out of the present business depression than any other class, for the tightening of credits and the absolute necessity for economy has compelled business

# Introducing

## Dr. O. N. Johnson and His Treatment For Azoturia

For more than sixteen years, I have made a special study of the pathology and the treatment of azoturia, and I have treated hundreds of cases. From this extensive study and experience I have discovered a treatment for this disease that has given **more uniformly satisfactory results** than any **other combination of drugs** that I and many other veterinarians have used. These uniformly satisfactory results have led me to believe that the veterinary profession will be greatly benefited by using this treatment.

My placing this preparation on the market, now, for the first time is not the result of hasty conclusions because it has served me so well, but I am offering it to the profession only after exhaustive consultations with the most eminent authority in America on veterinary materia medica.

This remedy is composed of ethyl nitrite, salicylic acid, oil of cajuput, fluid extract capsicum, fluid extract ginger, camphor, rectified oil of turpentine and mineral oil. The dose is eight ounces, to be repeated every hour, in severe cases, until relief is evident. Two to four quarts should effect a recovery. The first case treated will convince you of its superior merits.

DR. O. N. JOHNSON.

Sold only to the veterinary profession in **2 gallon containers for $8.00, 3 gallon containers for $10.00, 5 gallon containers for $15.00.** Shipments made same day order received. Send cash with order or shipment made C. O. D. Inquiries solicited.

**DR. O. N. JOHNSON**

**716 WASHINGTON ST.**
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**O N J**



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**CANINE OPERATING TABLE.**

*Neatly Finished*

*Servicable and Sanitary*

**MODEL A (Split Bed)**

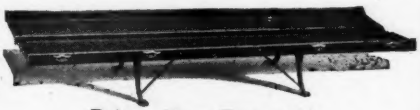
Made flat, or either side may be raised up independently of the other, or made "trough shaped" and tilted to any angle.

**MODEL B (Solid Bed)**

Has a solid, one piece bed, tilted to any angle, mounted on pedestal, same as Model A.

**MODEL C (No Pedestal)**

Has a solid one piece bed, mounted on four, six inch legs, braced, as shown below. This table may be set on a bench or inclined against it.



Prices Very Reasonable.

**Veterinary Specialty Co.**

**Holland, Michigan, U. S. A.**

LATHROP
U.S. VETERINARY LICENSE No 102
ANTI-HOG CHOLERA SERUM

Made in the country—where the environment and surroundings are pure—free from all possible contaminating influences.

An exclusive product which should interest the veterinarian who "looks into and thinks of the future as well as the present."

Correspondence solicited from qualified veterinarians.

Lathrop Serum Co. Lathrop, Mo.

firms to resort to the cheapest way to handle their hauling and delivery service.

"That it will also be done just as efficiently as with motorized equipment will be a lesson that they will not soon forget. As soon as a man makes a comparison of costs, he gives the horse the job, but it is an eye-opener to him to realize after a year's service, that he has accomplished as much as ever. Low first costs, operation and maintenance bills cut right in two, and the slow depreciation of horse-drawn equipment, are making a stronger appeal today than they have for several years. Furthermore, the horsemen and allied interests are beginning to make a noise about it. The horse can deliver the goods, and to great advantage to the user, but he never before had a horn. Now, however, the Horse Association of America will publish facts and figures which will attract favorable nation-wide attention to horse economy and dependability. There are manifold indications that in the readjustment of business which is certain to take place during the next few months, we will see a widening of market and an increase in demand for good horses and mules, which will give us the strongest spring trade we have enjoyed for many years."

## HOG CHOLERA COMPLICATED WITH HEMORRHAGIC SEPTICEMIA.

I am sending you the heart of a pig that weighed about 125 pounds. This animal refused to eat in the morning and lay in the nest. When forced to move he walked with a staggering gait. When I saw the pig he was down and could not get up, and seemed to be in great distress. The temperature 95 degress F., and there were large purple blotches on the skin of the abdomen. Autopsy showed small hemorrhagic points in the subcutaneous and subserous tissues, and also in the kidneys and bladder. The lymph glands were dark and infiltrated with bloody serum. The lungs showed areas of pneumonia. The spleen was large and black, and the contents jelly-like in consistency. The stomach and bowels were empty.

Could the tumor-like formation on the valves of the heart cause the lesions enumerated or are they the result of some acute infectious disease, such as hog cholera? I have on postmortem examination found lesions similar to these in hog cholera.—H. H., Indiana.

Reply—No pathogenic organisms were

# Indiana Veterinary College

## A Complete Course in Veterinary Science

GRADUATES ELIGIBLE TO ANY AND ALL SOCIETIES AND EXAMINATIONS

**Session begins September 20, 1921**

CATALOG ON APPLICATION

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# UNIVERSAL SERUM

THE SERUM SUPREME, PRODUCED UP TO A STANDARD ALWAYS, NEVER DOWN TO A PRICE.

**A Polyvalent Anti-Hog-Cholera Serum, the Best that Science can Produce and which Assures that High Standard of Potency Required for Good Results in the Field.**

**Dr. R. H. Schwarze (Formerly with Illinois University) now in Charge of Our Plant at East St. Louis, will be Pleased to Furnish you with Laboratory Diagnosis Free at Any Time.**

## UNIVERSAL SERUM CO.

**PEORIA, ILLINOIS**

**Federal Warehouse Bldg. W. J. BALZER, Manager Day and Night Service.**
**DAY PHONE M-5820 NIGHT PHONE M-3776**

*Distributors For Vita Worm Capsules For Swine*

# Use a Serum

that all veterinarians speak of with confidence and respect.

# EAGLE

*"The Ace of All Serums"*

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**THE EAGLE CO.,**
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**Nashville, Tennessee.**

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**Galesburg, Illinois.**

**THE EAGLE CO.,**
**Cedar Rapids, Iowa.**

**THE EAGLE CO.,**
**Indianapolis, Indiana.**

**Dr. W. G. COOK,**
**Findlay, Ohio.**

**OHIO VETERINARY SUPPLY CO.,**
**Washington C. H., Ohio.**

**H. M. ATHERTON.,**
**338 Indiana Ave., N. W., Washington, D. C.**

THE EAGLE CO.


found in the heart blood. The tumor (Papilloma) in right ventricle of heart, located on the tricuspid valve, could not have caused the lesions described by you.

We believe you are fully justified in having made a diagnosis of hog cholera, though there is evidence in the lesions of a mixed infection with hemorrhagic septicemia.—C. A. Zell.

## NEW VETERINARY DEAN AT PULLMAN.

Dr. S. B. Nelson, who for 25 years has been dean of the veterinary department of the State Agricultural College of Washington, is now giving his entire time to his duties as director of agricultural extension, and the deanship has been conferred upon Dr. E. E. Wegner, acting dean for the past two years, and professor of veterinary surgery.

Dr. Nelson has been intimately associated with affairs in veterinary medicine in the entire Northwest for many years, and the veterinary profession and the livestock industry regret his withdrawal from this phase of the livestock work.

### Philadelphia Veterinary Club Meeting.

The regular monthly meeting of the Philadelphia Veterinary Club in conjunction with the laboratory section, was held in the Veterinary School of the University of Pennsylvania, on the evening of May 24, 1921.

Dr. Theobald Smith, director of the Department of Animal Pathology, Rockefeller Institute for Medical Research, at Princeton, N. J., was the speaker of the evening, his subject being "Bovine Infectious Abortion."

Dr. Smith, who is looked upon as one of the world's greatest research men, gave a resume of the present knowledge on this scourge in a delightfully scientific and practical talk.

He stated, in part, that perhaps a better name for infectious abortion disease would be an infectious disease of the fetal membranes, since the infection seems to be confined to the membranes of the fetus and the cotyledons of the mother. The ideal material to study in this infection would be to get the fetus in utero, since when the os is once dilated, as is the case in abortion, there is always the danger of other organisms finding their way into the uterus. Studying fetal membranes that have undergone degeneration, is unsatisfactory.

(Continued on page 89)

(Continued from page 84)

Abortion might be caused by conditions that are associated with, or follow almost any of the infectious diseases, by the causative factors of such infections, getting into the utero-chorionic space, but these abortions are not the cases we think of as infectious placental disease.

He cited a case where a mucor was found in the uterus when abortion had taken place, but no abortion bacilla were found. The bacillus pyogenes is also sometimes found but he questions if it is ever the primary factor likewise the staphylococus and streptococcus are sometimes found.

In Dr. Smith's observations he has never found but one case where the amnion was diseased.

**Important Factors.**

So far two organisms only seem to be important. The bacillus abortus bang, and the vibrio fetus. The vibrio produces lesions of the membranes that appear identical with the B. abortus and is recovered in the same places as the B. abortus; i. e., lungs, fourth stomach and meconimum. Fresh material crushed is better for microscopical examination of the vibrio than stained material.

The action of the vibrio in causing disease seems different from that of the B. abortus, the former appears to enter the circulation of the choronic villi and the cotyledons causing thrombosis. This pathological condition was demonstrated by lantern slides.

The speaker stated that in examing some thirty cases where the vibrio was present, that only in one case was it mixed with the B. abortus.

As to the origin of the vibrio, it seems probable that it originated with the sheep.

The B. abortus bang disease is by far the most widespread. The chorion is the primary seat of infection, the inflammation is not purulent, but rather of a fibrous exudate and desequamated epithelium; beginning at the periphery of the cotyledons and passing inward, consequently examination of different uteri with a retained placenta, show different stages and intensity of lesions.

**The Effect of B. Abortus on the Fetus.**

The B. abortus has almost no effect on the fetus excepting that it interferes with the circulation, the organisms being confined largely to the respiratory and digestive tracts; like-

(Continued on page 93)


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# ASSOCIATION MEETINGS

The information given below is up-to-date and has been furnished by the secretaries of the various associations listed. Secretaries are requested to furnish us data regarding their association after each meeting; otherwise the association will necessarily be dropped from the list. We trust the secretaries will co-operate with us in keeping before the members of their associations the date and place of the next meeting.

| ASSOCIATION | PLACE | DATE | SECRETARY |
|---|---|---|---|
| Alabama Vet. Med. Assn. | Auburn, Ala. | March, 1922 | C. A. Cary, Auburn, Ala. |
| American Vet. Med. Assn. | Denver, Colo. | Sept. 5-9, 1921 | N. S. Mayo, 4753 Ravenswood Ave., Chicago |
| British Columbia Vet. Assn. | Seattle, Wash. | | Kenneth Chester, 310 Warren Ave., New Westminster, B. C. |
| California State V. M. A. | Los Angeles, Cal. | June, 1922 | J. P. Bushong, 112 Normal Hill Center, Los Angeles. |
| Central Can. Vet. Assn. | Ottawa, Ont. | | A. B. Wickwire, 1031 Carling Ave., Ottawa, Can. |
| Central Mich. Vet. Soc. | | | W. N. Armstrong, Concord, Mich. |
| Central Neb. Vet. Assn. | Kearney, Neb. | Sept., 1921 | L. B. Wolcott, Shelton, Neb. |
| Central N. Y. Vet. Med. Assn. | Syracuse, N. Y. | Nov., 1921 | W. B. Switzer, Oswego, N. Y. |
| Chicago Vet. Soc. | Chicago | Second Tuesday of each month | J. B. Jaffray, 1522 S. Albany Av., Chicago, Ill. |
| Colorado Vet. Med. Assn. | Denver, Colo. | | I. E. Newsom, Fort Collins, Colo. |
| Conestoga Vet. Club | Lancaster, Pa. | Second Thursday each month | H. B. Brady |
| Connecticut V. M. Assn. | New Haven, Conn. | | G. E. Corwin, 99 Ann St., Hartford, Conn. |
| Eastern Iowa Vet. Assn. | Cedar Rapids, Ia. | | J. Wolfe, Grand Mound, Ia. |
| Genesee Valley V. M. Assn. | Rochester, N. Y. | | F. E. Cleaver, Avon, N. Y. |
| Georgia State Vet. Assn. | Macon, Ga. | Between Sept. 8-15, 1921 | P. F Bahnsen, Americus, Ga. |
| Hudson Valley V. M. Assn. | Rhinebeck, N. Y. | | W. H. Kelly, 233,Western Albany N. Y. |
| Illmo V. M. Assn. | Nat'l Stock Yds. | | J. E. Jennings, Nat. Stk. Yds., Ill. |
| Illinois S. V. M. Assn. | Chicago | Dec., 1-2, 1921 | D. M. Campbell, 9 So. Clinton St. Chicago |
| Indiana V. M. Assn. | Indianapolis | January, 1922 | E. T. Davis, Plainfield, Ind. |
| Iowa Vet. Assn. | Ames and Des Moines | January, 1922 | H. D. Bergman, Ames, Iowa |
| Kansas V. M. Assn. | Salina, Kans. | January, 1922 | W. J. Guilfoil, 221 N. 17th St., Kansas City, Kansas |
| Kentucky V. M. Assn. | Louisville, Ky. | | C. W. Fisher, Danville, Ky. |
| Louisiana Vet. Med. Assn. | | | E. P. Flower, Baton Rouge, La. |
| Maine V. M. Assn. | Bangor, Me. | | P. R. Baird, Waterville, Me. |
| Massachusetts V. A. | Boston, Mass. | Fourth Wednesday ofmonth. | H. W. Pierce, West Medford, Mass. |
| Michigan S. V. M. A. | East Lansing, Mich. | | R. A. Runnells, East Lansing, Mich. |
| Minnesota S. V. M. A. | St. Paul | January, 1922 | C. P. Fitch, University Farm. St. Paul |
| Mississippi Valley V. M. A. | | | W. L. Hollister, Avon, Ill. |
| Mississippi S. V. M. Assn. | Canton, Miss. | January, 1922 | J. A. Barger, Jackson, Miss. |
| Missouri Valley Vet. Assn. | Kansas City | Feb., 1922 | R. F. Bourne, Ft. Collins, Colo. |
| Missouri Vet. Med. Assn. | | | C. D. Folse, 4018 Harrison, Kansas City, Mo. |
| Natl. Assn. of B. A. I. | Meet with A. V. M. A. | Sept. 5-9, 1922 | S. J. Walkley, Milwaukee, Wis. |
| Nebraska S. V. M. Assn. | | | C. J. Norden, Lincoln, Nebr. |
| Nevada State Vet. Assn. | Reno, Nevada | | S. Lockett, Reno, Nev. |
| New York S. V. M. Soc. | | | C. E. Hayden, Ithaca, N. Y. |
| North Carolina S. V. M. A. | Asheville | June, 1922 | J. P. Spoon, Burlington,N. C. |
| Northern San Joaquin Valley V. M. A. | | | R. A. Ball, Modesto, Calif. |
| Ohio St. Vet. Med. Assn. | Columbus, Ohio | January, 1922 | R. I. Bernath, Wauseon, Ohio |
| Okla. St. Vet. Med. Assn. | | | H. W. Ayers, Oklahoma City. |
| Ontario Vet. Assn. | Toronto, Ont. | Aug. 11, 12, 1921 | J.S. Glover, 296 George St., Toronto. |
| Oregon V. M. Soc. | | | B. T. Simms, Corvallis, Ore. |
| Pa. State Vet. Med. Assn. | Harrisburg, Pa. | January, 1922 | R. M. Staley, P. O. Box 1404, Philadelphia, Pa. |
| Philadelphia Vet. Club | Philadelphia | Fourth Tuesday of month | C. S. Rockwell, 5128 Chestnut, Philadelphia |
| Prince Edward Isl. V. M. A. | Charlottetown, Can. | | W. G. Church, Summerside, P. E. I., Can. |
| Schuylkill Val. V. M. A. | Reading, Pa. | | R. L. Burger, Hamburg, Pa. |
| Southern Cal. V. M. Assn. | Los Angeles | Third Wednesday of month | J. P. Bushong, Los Angeles. |
| Southeastern Mich V. M. A. | Detroit, Mich. | Second Wednesday, January, April, July, October | H. P. Hoskins, Box 471, Detroit, Mich. |
| Southeastern St. V. M. A. | | | I. L. Handley, Atlanta, Ga. |
| Southern Tier V. M. A. | Elmira, N. Y. | | R. R. Birch, Ithaca, N. Y. |
| Tennessee V. M. A. | Knoxville, Tenn. | | J. M. Jones, Lewisburg |
| Utah S. V. M. Assn. | Salt Lake City | October, each year | E. A. Bundy, Ogden |
| U. S. Live Stock San. Assn. | Chicago, Ill. | Nov.-Dec., 1921 | T. A. Burnett, Columbus, Ohio |
| Vermont Vet. Med. Assn. | Montpelier, Vt. | | Geo. Stephens, White River Jct. |
| Vet. Assn. of Alberta | Calgary, Alta. | September, 1921 | T. E. LeClaire, 110 6th Ave. E. Calgary |
| Vet. Assn. of Manitoba | Winnipeg, Man. | | J. B. Still, 711 Boyd Bldg., Winnipeg |
| V. M. Assn. of New York City | 338 E. 26th St. | First Wednesday of month | I. E. Crawford, Far Rockaway |
| Va. S. V. M. Assn. | | | W. G. Chrisman, Blacksburg, Va. |
| Wash. State Col. V. M. A. | Wash. State College | Second and Fourth Tuesday of Month | S. Worley, College Sta. |
| Wash. S. V. M. Assn. | | | C. Cozier, Bellingham |
| West Virginia V. M. A. | | | C. L. Higginbotham, Charleston. |
| Western N. Y. V. M. Assn. | | | F. F. Fehr, 243 S. Elmwood, Buffalo. |
| Western Pa. Vet. Club | Pittsburgh | Third Tuesday of month | Fred Weitzel, Pittsburgh |
| Wisconsin V. M. Assn. | Madison, Wis. | January, 1922 | O. E. Eliason, Madison. |
| York Co. V. M. Soc. | York, Pa. | First Tuesday March, June, September, December | E. S. Bausticker, York, Pa. |

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wise the uterine mucosa is affected but slightly, the damage being done after the membranes have undergone decomposition, consequently the cow's general condition is affected but little or not at all by the B. abortus bang.

In the case of the guinea pig it is entirely different, the disease soon becoming a generalized infection.

**Pathologic Histology.**

The B. abortus impregnates the epitheleal cells of the choronic ville, the cells die and so the mucus membrane becomes infected.

In studying a series of cases, abortion may occur early, having but little effect upon the cotyledons of the uterus; or the fetus in the presence of the disease, may live full term.

In discussing the problem of the bull being a carrier, it is Dr. Smith's belief that if the bull is the sole infecting agent, then all abortion should occur early. It is possible, therefore, with the lack of definite knowledge on this subject that the bull may be incriminated in the case of early abortions, but present indications are that in the majority of cases, infection occurs through the digestive tract, allowing, of course, as in other diseases, the possibilities of other accidental ways.

Many calves are apparently born of diseased mothers and grow up all right. Dr. Smith doubts if there is any relation between white scours in calves and the B. abortus disease.

**Relation of B. Abortus Bang to Udder of the Cow.**

It is evident at once that myriads of organisms are spread to the udder by a diseased placenta. What the abortus bacilli do to the udder is not clear but they may remain there for years. It is possible that they may produce antibodies and in this way act as an auto-vaccination; if, however, organisms enter the utero-choronic space, no vaccination will control their action; the thing to do is to keep them out.

The effect, if any, on the human subject by the presence of the B. abortus in the udder and milk of a cow has not been determined.

**Diagnosis.**

The blood tests are qualitative not quantitative. One test will not prove anything, as the reaction is always on a curve and does not denote whether the infection is just begin-

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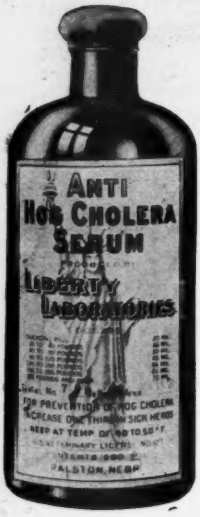


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ning, whether it is at its height, or whether it is dying out, or whether it results from udder infection only.

**Control.**

If we should kill all cows that harbor the B. abortus bang, then the vibrio might become more prevalent, and if all cows harboring the vibrio were destroyed, it is possible that some other organism would take their place and so require the extermination of the bovine.

As to vaccine, the speaker is carrying on experiments with living organisms but the tests have not been carried over a sufficient number of years to warrant making any definite statements.

Dead organisms, if of value, in his judgment, would need to be given often and in large doses.

A discussion followed, and among those who asked questions and gave their experience were Drs. Barnes, Hart, Paull, C. Marshall, F. Marshall, E. C. Dubler, E. S. Dubler, Dick, McNeil, Burr, Rich, Reed, McCartney and DeVine.

In questions answered by Dr. Smith, he set forth the opinion that—

(1) The causes of abortion in cattle and mares are not the same, the latter being due probably to a para-typhoid organism.

(2) Agglutination and complement-fixation tests are rather accurate and correspond to the bacteriology, that is when an animal does not react to B. abortus antigen, but still aborts, there is the probability of that particular case being caused by some other agent.

(3) The B. abortus is very short-lived in the uterus after the fetus is expelled.

(4) It is not well to disregard the danger of the bull and it would be well to examine bulls frequently serologically, since it is possible in the bull, as in the guinea pig that the testicles may become affected.

J. F. DeVINE.

Dr. S. H. Woods, graduate of Kansas City Veterinary College, who has for several years been engaged in general practice at Murfreesboro, Tenn., has been appointed assistant state veterinarian of Tennessee.

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**Dr. W. Horace Hoskins, Dean of New York State Veterinary College, is seriously ill at a hospital in New York City.**

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**Dr. C. H. Colton, a graduate of the Colorado Agricultural College, has located in Boise, Idaho.**

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**Dr. Elmer Johnston, Salesmanager of the United Serum Company of Kansas City, was married to Miss Hazel Childers at Arkansas City, Kansas June 16.**

---

**On the charge of having shipped misbranded hog tonic, the David Roberts Veterinary Company of Waukesha, Wisconsin, was fined $10.00 in the Federal Court recently.**

---

**Dr. J. S. Craft, formerly of Des Moines, Iowa, is now located in Grinnell, Iowa.**

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**Dr. John H. Oyler, 68 years old, a graduate of the Ontario Veterinary College, and one of the best known veterinarians in the East, died at his home in Harrisburg, Pa., July 4.**

---

**Dr. James C. Curran, 100 years old, died at his home in Brooklyn, N. Y., June 15. Up to the time of his death Dr. Curran was the oldest practicing veterinarian in the United States and perhaps in the world. He was born in Ireland and located in practice in Willaimsburg, N. Y., seventy-five years ago. Drs. John J. and Thomas J. Curran, both veterinarians, are sons.**

---

**Dr. W. P. Jackson, of Chico was elected President of the California State Veterinary Medical Association at the annual meeting held in Fresno in June. Dr. Oscar Kron, of San Francisco, was made Vice-president; Dr. J. M. Arburua, of Hanford, Secretary, and Dr. James Boyd, of Milpitas, Treasurer. The meeting was largely attended. The session next year will be held in Los Angeles.**

---

**Thirteen applicants successfully passed the State Board examinations at Ft. Worth, Texas, last month and were granted licenses to practice.**

---

**Alfred S. Burdick, M. D., has been elected to fill the vacancy as President of The Abbott Laboratories, caused by the death of Dr. W. C. Abbott. He is a graduate of the Alfred University, Alfred, N. Y., and Rush Medical College, Chicago. He has been closely associated with The Abbott Laboratories for over seventeen years, and for the past six years has been Vice-President and Assistant General Manager.**

---

Dr. F. L. Stein has resigned his position as veterinary inspector in the U. S. Department of Agriculture, Bureau of Animal Industry, and will open a veterinary hospital at 655 Joseph Avenue, Rochester, N. Y. Dr. Stein formerly lived in Buffalo, N. Y.

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Dr. Gibson, in charge of tuberculosis eradication in Tennessee, will be succeeded on Aug. 15 by Dr. E. I. Smith, Salt Lake City, Utah. Dr. Smith was associated for many years with Dr. J. A. Kiernan on tick eradication work in Tennessee. In fact, at the time the whole of Tennessee was released from Federal quarantine, seven years ago, Dr. J. A. Kiernan was U. S. inspector in charge, Dr. E. I. Smith his assistant, and Dr. Geo. R. White, state veterinarian.

—o—

Dr. John T. Ellis, engaged in hog cholera control work in Tennessee for the past several years, has been transferred to the force of Dr. W. K. Lewis in South Carolina.

—o—

Dr. C. T. Howard, formerly assistant state veterinarian of Tennessee on tuberculosis eradication, has returned to his home in Indiana.

—o—

Dr. F. H. Schleich, formerly of the Federal tuberculosis eradication force of Florida, has been transferred to the hog cholera control division and stationed at Nashville, Tenn.

—o—

Dr. Robert D. Green, U. S. inspector on hog cholera control in Tennessee, has been transferred to the same class of work in Kentucky.

—o—

Dr. E. B. Parker, who until recently was engaged in private practice at Shelbyville, Tenn., has been reinstated by the bureau, and assigned to work in Tennessee.

—o—

Dr. R. F. Bourne, of the veterinary faculty of the Colorado Agricultural College, is making an extended visit in Kansas City. Mrs. Bourne and the children are with him.

## TUBERCULOSIS IN FOWLS.

I am sending you portions of the intestine and liver taken from a hen. This hen had been drooping about for several days before we destroyed her. Dullness, inappetence and emaciation were the symptoms I observed. The nodules existed throughout the greater portion of the intestines.—J. B. B., Iowa.

Reply—Many tubercle bacilli were found in the liver and in the nodules in the intestines. I would recommend the destruction of all the sick chickens and tuberculin testing of the remainder of the flock.—C. A. Zell.

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## FOR SALE

FOR SALE—Veterinary practice and modern home in Eastern Iowa, doing $6,000 and better. Town of 2,500. Leaving State. Full particulars on request. Address No. 619 Veterinary Medicine, Chicago.

FOR SALE—Practice in central Iowa. One of the best in state; county seat, gravel roads, no competition; reason, other business. Only selling office equipment and stock. About $1,000 it will invoice. Will not answer unless you have your banker write. Address No. 624, VETERINARY MEDICINE, Chicago.

FOR SALE—Large Veterinary practice in the live stock section of Illinois. Drugs, four acres rich land, six-room house, office in connection, large barn and shed, good chicken house, good water and plenty of fruit. Practice in 1920 ran $3,500, 100 percent collections. Closest competitor nine miles, next thirteen. Live town. New consolidated high school, Odd Fellow and Masonic orders. This is a live proposition and if you mean business write me as I must change climate. Address No. 625, VETERINARY MEDICINE, Chicago.

FOR SALE—An Iowa practice with equipment in good, large stock raising territory. Not much capital needed. Full information on inquiry. Address No. 626, VETERINARY MEDICINE, Chicago.

FOR SALE—Large established Dog and Cat practice in Los Angeles, Calif. Best city in U. S. for good practice. Best location in city. New up-to-date hospital and kennels. Will sell business alone or with property. Have other interests which take all my time. Address No. 622 VETERINARY MEDICINE, Chicago.

FOR SALE — Splendid practice in central Illinois, oiled roads, collections 100 percent. Live community, both churches and schools. All information and terms on request. Address No. 630, care of VETERINARY MEDICINE.

FOR SALE—An exceptionally good mixed practice near a large city. Practically all business cash. Price reasonable. Address No. 631, care of VETERINARY MEDICINE.

## POSITIONS, LOCATIONS, ETC.

POSITION WANTED—as an assistant to some Veterinarian. I am a graduate of the Terre Haute Veterinary College, Terre Haute, Ind., April 12, 1912. I have license to practice in the states of Alabama, Indiana and Texas. Speaking knowledge of French, Spanish and German. Served in the Veterinary Corps, U. S. A. from June 16, 1917, to Dec. 20, 1920. Served in the A. E. F. with the 42d Rainbow Division. Age 32. Single, ready to accept position at once. Address No. 629, VETERINARY MEDICINE, Chicago.

WANTED—Position as Assistant to Veterinarian in progressive country practice in Southwest, or Middle West with view to purchase interest or succession at the end of two, three or five years. Address No. 628, VETERINARY MEDICINE, Chicago.

POSITION DESIRED—Preferably as Teacher or Instructor in Veterinary College or agricultural college (Veterinary Dept.) Graduated 1915. (Iowa State College, Veterinary Dept.). Will also consider other positions; field positions, any kind. Address 2805, care F. V. Kniest, Peters Trust Bldg., Omaha, Nebr.

POSITION WANTED — By graduate Veterinarian. Age 28. Unmarried. Prefer teaching or position in commercial lines. Wide experience. Position in practice considered only temporarily unless exceptional. Address No. 627, VETERINARY MEDICINE, Chicago.

WANTED—To purchase a large Dog and Cat or mixed practice in a big Eastern City—no real estate—or would consider one-half share. Address No. 623, VETERINARY MEDICINE, Chicago.

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## IN CZECHO-SLOVAKIA.

I must confess that the three volumes of VETERINARY MEDICINE which you sent me gave me great pleasure, and that the contents of this periodical surprised me more than I can express.

DR. THEODOR KASPAREK,
c|o Veterinary Institution of the Bohemian Technical High School, Prague, Czecho-Slovakia.

Dr. J. E. Gibson, Indianapolis, Ind., traveling inspector for the tuberculosis eradication division of the bureau, is acting as inspector in charge of B. A. I. activities in Tennessee temporarily. His headquarters are at Nashville.

assigned to tuberculosis eradication in Tennessee. His headquarters are at Nashville.

—o—

Dr. Dennis Coughlin was, on July 1, transferred from the meat inspection force of Dr. E. P. Cary, Nashville, Tenn., to the tuberculosis eradication force in Tennessee. His headquarters are at Nashville.

—o—

Dr. Geo. McCollister, formerly assistant state veterinarian of Tennessee, but recently reinstated by the bureau, has been transferred to the force of Dr. M. W. Newton at Lansing, Mich. He will engage in work of hog cholera control.

—o—

Dr. C. C. Brown, graduate Chicago Veterinary College, who has for several years been engaged in general practice in Memphis, Tenn., has been appointed assistant state veterinarian of Tennessee.

—o—

## TO ASSIST SCIENTISTS AND RESEARCH WORKERS.

Many scientists lack the library facilities which their work demands. They are compelled either to journey to distant libraries or to try to borrow books by mail. Often it is difficult for them to locate something that is badly needed, and again it may be impossible to borrow it.

The Research Information Service of the National Research Council is prepared to assist investigators by locating scientific publications which are not generally or readily accessible. It will also, as is desired, have manuscripts, printed matter or illustrations copied by photostat or typewriter. The cost of copying varies from 10 to 25 cents per page. No charge is made for this service unless an advance estimate of cost has been submitted and approved by correspondent.

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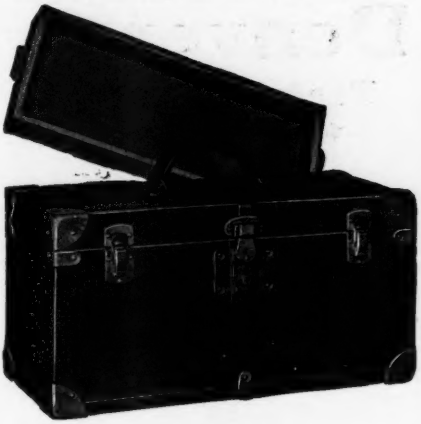

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## WE WOULDN'T SAY IT THAT WAY.

VETERINARY MEDICINE compared with any veterinary journal that I know of is like comparing the rafters of heaven to the sills of hell.—J. L. D., New York.

## PASSING OF NELLIE BLY.

Recently "Nellie Bly," the Kentucky mare who each April, for several years, was a conspicuous participant in the "Be Kind to Animals" parade at Worcester, Mass., died at the age of thirty-six. For many seasons a queen of the turf, the racing merits of this mare caused her name to be known far and wide. In her declining years Nellie received all the comforts a horse could enjoy on the farm of her mistress, Mrs. E. D. Eagan, Blithewood Avenue, Worcester, Mass. Here the famous animal received the homage of many horsemen who visited her to show their admiration for her record, her endurance, and her mettle. She was greatly endeared to her owners by her quick intelligence, her moods, and her affectionate disposition.

A license is now required of all veterinarians desiring to practice in the state of Idaho. The legislature recently passed a law governing this. Heretofore practitioners who did not pretend to be graduates and who gave due notice that they were non-licensed were permitted to practice within the state.

Dr. J. C. Kimbrough has located in Lexington, Mo.

—o—

A farm to be used exclusively for experimental and research purposes has been acquired by the Veterinary Division of Iowa State College.

—o—

Dr. H. B. Roshon is directing the organization of a veterinary unit of the Reading National Guard at Reading, Pa.

—o—

Dr. V .M. Kaliher has succeeded Dr. E. W. Newhalfen in practice at Henry, Ill.

—o—

Sixty-four graduates were awarded diplomas at the recent commencement exercises of the Indiana Veterinary College.

—o—

The Alexander Biological Laboratories of Kansas City, Mo., have sued Dr. P. F. Bahnsen, state veterinarian of Georgia, for $16,000 alleging breach of contract on a serum deal.

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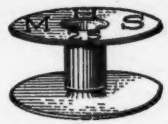


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Dr. A. F. Schumm has moved from Arbuckle, Calif., to a new location in the San Joaquin Valley.

—o—

Dr. J. P. Henderson, a graduate of the Kansas City Veterinary College, has taken over the practice of the late Dr. J. A. Lepley at Covina, Calif.

—o—

Dr. C. A. Nelson of Brainard, Minn., will begin shortly the erection of a modern veterinary hospital.

—o—

Drs. J. H. Bux, W. E. Dodd, C. H. Davis, J. H. Cooper, J. W. Havorka and Roy Gregory have been licensed to practice in the state of Arkansas.

—o—

Dr. I. C. Mattingly of Rolla, Mo., recently received an appointment as assistant state veterinarian.

—o—

Drs. A. J. Webb, E. A. Bundy, Claude M. Dee and Frank Parker have been made assistant state veterinarians in Utah.

—o—

Dr. H. C. Singer has built a modern hospital adjoining his home at Pana, Ill.

Dr. W. J. Ratigan has been appointed to a position in the department of pathology of the Charity Hospital at New Orleans, La.

—o—

Bids for a $50,000 veterinary building at the Alabama Polytechnic College have been asked.

—o—

Dr. Thomas Frazier of Richmond, Va., is spending several months in Scotland visiting relatives.

—o—

Dr. W. A. Scott, Cincinnati '18, for the past two years supervising inspector, dairy and food division, Department of Public Health, Akron, Ohio, has resigned to take the position of chief dairy and food inspector of the Dairy and Food Division at Canton, Ohio.

—o—

Dr. V. H. Cubela has taken over the practice of Dr. Sillick at Darlington, Wis.

—o—

Thirty-five veterinarians and 14 physicians are on the present teaching staff of the New York State Veterinary College, New York City. Among them is Dr. Lachlan McLean of Brooklyn, known as one of the oldest veterinarians in the United States. He graduated 67 years ago.